KENDALL ELEANOR L. A TENTATIVE COURSE OF STUDY IN ART AND
1938 MECHANICAL DRAWING FOR THE JUNIOR AND
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THESIS

A TENTATIVE COURSE OF STUDY IN ART AND MECHANICAL DRAWING FOR THE JUNIOR AND SENIOR HIGH SCHOOLS OF BEVERLY

Submitted by

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In partial fulfillment of the requirements
for the degree of Master of Education

1938

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PREFACE

In the field of art, as in any other field of study, we should be looking forward to the day after tomorrow.

In order to build a living course of art the public in general must be interested in art; it must be a part of their lives; something which they can no more do without than water or lighting. We must not be able to plead poverty or necessity, as we do now, as an excuse for ugliness and dirt. If we raise a building, whether it be palace, factory, or cottage, it must be a thing well understood that it must be sightly.[1]

Therefore, art should interest the boys and girls, men and women of today, in a cause for which to strive. A city is only worthy of its hills, plains and forests, its homes, public and civic buildings, when by all its acts and arts it is preserving them or making them lovely for future generations.

You who understand the influence of beauty in living are masters of your environment and build your character upon attractive homes, good furniture, gardens, clothes, and utensils. Those who neglect these things pay for their ignorance in being mastered by ugly surroundings which breed unhappiness and inefficiency. You are building the United Stated for a hundred years hence.[2]

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[1] House Beautiful, 1917.

[2] Program of Study, Appleton Wis., Junior High School

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Therefore, in planning these courses of study the matter of fundamental experiences which will in a large measure be found distributed throughout the community will be dealt with. In the homes, churches, motion picture theaters, on the street, and in the parks the people of today will be continuously confronted with these omnipresent works of man's art. These incessant experiences can be utilized as means of developing sensitiveness to beauty and ugliness; and so far as needful as the basis for an intellectual understanding of the art principles involved.

Vocational training should be specific. It should train an individual for what he needs in the one vocation that he is entering. It is not to be given to those who are not entering that vocation. It should be intensive and thorough. It is not to be toyed with by those who are not taking it seriously.

Naturally professional draftsmen and designers need long and intensive training in drawing and design.[1]

Our country stands on the threshold of achievement with unusual opportunities and responsibilities. Art is certain to be a factor in development, but art must too become effectual, be cultivated and understood.

---

[1] How to Make a Curriculum by Franklin Babbit; Houghton, Mifflin Co. (Pages 219-228)

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[1] How to Make a Curriculum by Franklin Bobbitt; Houghton, Mifflin Co. (Pages 213-228)

The true purpose of art teaching must be the education of the whole people for appreciation. In a sympathetic public is found the life giving influence which creates works of fine art, and the measure of their excellence is the measure of a city's, of a nation's appreciation.[1]

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[1] Theory and Practice of Teaching Art; Arthur W. Dow; Teachers College, Columbia University, New York City,N.Y.,1912

ACKNOWLEDGMENTS

This thesis is to be looked upon as an initial attempt to plan tentative courses of study in Art and Mechanical Drawing for the Junior and Senior High Schools of the City of Beverly. It is merely a beginning, and serves only to open up possibilities for future development of these courses of study which would form a real training for the student.

I am convinced that courses of study such as I have organized would give the student an eagerness for that knowledge of art or mechanical drawing which would aid him in more correctly adjusting his future life work and surroundings.

To carry the idea through successfully would result in changes in curriculum and methods of teaching.

I also wish to take this opportunity to thank the following for their kind cooperation and advice while I have been studying for both Bachelors and Masters degree -

Dean Jesse B. Davis - Dean of B. U. School of Education.
Mr. Arthur H. Wilde - Former Dean of B. U. School of Education.

My sincere thanks are due to Professor John J. Mahoney of the B. U. School of Education for the help which he gave me while I wrote these courses of study, and to Mr. Starr M. King, Superintendent of Schools in the City of Beverly for his interest and suggestions given while I was planning the courses of study.

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A TENTATIVE COURSE OF STUDY IN ART AND MECHANICAL DRAWING FOR THE JUNIOR AND SENIOR HIGH SCHOOLS OF BEVERLY

I INTRODUCTION

THE DISCUSSION OF THE SCOPE OF THE SUBJECT

Art is a vital subject in the curriculum because it trains directly for the promotion of finer standards of citizenship and for the higher ideals of civilization. Through art, life may be enriched and the capacity for enjoyment and contentment may be greatly increased. Ruskin, one of the greatest advocates of art education, said that "Art contributes to man's mental health, power, and pleasure."

By finer standards of citizenship and higher ideals of civilization we mean the desire created by art education for more beautiful cities and towns, more picturesque parks and boulevards, more beautiful homes and home furnishings, more pleasing yards and home surroundings, more tasteful personal appearance, more attractive offices and workshops, and more artistic products of industry. High standards of art demand order and beauty in all things. Better living conditions raise the individual to a higher plane and make him a happier, more contented citizen. Cleanliness and happiness contribute to health and good health increases the power of the individual.

Art possesses a service of widespread benefit to mankind, and it is necessary to have a certain amount of training and guidance to make use of this treasure of the ages.

Modern art education aims to interpret the message of art, and to help the child in creating an artistic background with which to enrich his future life.[1]

THE GROWING IMPORTANCE OF ART IN AMERICAN LIFE

In recent years there has been evidenced a constantly growing realization of the needs for art in production and commercial enterprises as well as in practically all activities of modern life. There has also been a tremendous spread of the concept of the dignity and importance of art.

Art permeates our life everywhere. It decorates our persons, plans our homes, lays out our cities, erects our monuments, and ramifies it in a thousand ways through every channel of trade. It must be plain, then, that it is a necessity and not a luxury. Born of man's need it has served as an index of his achievement in every past age.

The history of civilization may best be read in art, for no nation has ever risen higher than its art. Our gauge of people's past: of the Egyptians, Minoans, Etruscans, of the Romans, Gauls, Norsemen, and of all the mysterious kingdoms of the East is got from their search for beauty. Art has been the national thermometer telling to what heights skill and culture have risen in the workshops of the world. No material, whether metal or bone, clay or glass, flax, wool or silk, but has been dignified by art; and every museum has

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[1] The Class Room Teacher, Vol. II, Art, Pages 5.

its triumphs of Etruscan filigree, of Greek marble and Roman bronze, its ivory of India, rugs of Persia, silk of China, damascening of Spain, carving of Flanders and lace of Italy. Every material which could be woven or beaten, tempered or spun, chased or fretted, has at some time had lavished upon it the life-long study of master craftsmen. Its secrets have been read and its uttermost difficulties made the delight of minds that rejoiced in learning new ways to bend it to arts purposes.[1]

The important consideration for the practical business man in relation to art is in respect to its value to him. This also applies to the child. For every man, woman and child, every business organization, every city, and every state, art has a definite contribution and value. Modern advertisers have generally realized that art is a great business asset. The artistic standard of all books and magazines is instantly being raised. Manufacturers throughout the country are adding art directors to their production staffs. Merchants are sending their clerks to art school that they may more intelligently serve their patrons. Contractors, home builders. and producers of articles for the home, are constantly improving their service to meet the growing art demands of an artistic public.

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[1] "The Art Heritage of Industry" by James Parton Haney, The School Arts Magazine, Vol. IX, Page 1065.

Art is gaining in prominence in the schools and colleges. Museums of art are being founded in the smaller cities and towns throughout the country. Our great state and national expositions are giving more prominence to art. In fact art has established itself in the economic, social, industrial, commercial, and cultural relations of life.

BREADTH OF THE COURSE OF STUDY

In teaching art the instructor must bear clearly in mind the fact that art is not for the artist alone but for everyone; that there are both cultural and practical values of art. Art as a subject in the school curriculum relates in a vital way to industry, to home life, and to community life. In its modern interpretation art contributes directly to the civic, domestic, and social activities and needs of the people.

In the course of study emphasis is placed from time to time upon these different aspects of the subject. Attention is directed frequently to the basic principle and processes necessarily a part of the work if one desires fully to understand and appreciate beauty in the fine, the industrial, and the allied arts.

The work in art education in all grades should open the eyes and the minds of the pupils and endow them with a love for and an understanding of beauty in nature and in worthy works of man. It should enable them to enjoy life

more completely, and react to the beauties therein, through ability to see and appreciate beauty and to use beauty in their environments. In other words, the purpose of the course of study in art should be to supply substance for better and happier citizenship.[1]

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[1] The Class Room Teacher, Vol. II, Pages 6 and 7

THE PRESENT CURRICULUM

Under the present curriculum the first and second term outlines are identical as to the number of hours devoted to each subject.

The schedule of the class hours as they have been planned for the school year of 1937-8 for both the Junior and the Senior High Schools in the City of Beverly are given on the blue print schedule cards, as well as the schedule cards for the tentative courses of study.

The schedules for the tentative courses of study will indicate that the length of subject matter of these courses will require two teachers for each school instead of one.

The study halls on both the Junior and Senior High School schedules should be planned so that the boys and girls will have an opportunity to make up art work within school hours. In this manner art work will not conflict with the major curriculum subjects.

These study hall classes may also be the regular study halls for a small group of students, uninterested in art, who may study their academic subjects.

ORGANIZATION OF THE COURSES OF STUDY.

METHOD OF APPROACH TO THE PLANNING OF THE COURSES OF STUDY.

It is agreed that all courses of study within a curricula should have a definite relation to one another. This should be at once apparent to the student so that he may bend his efforts toward a goal which will unify the extremely complex phases of his training. Any course which tends to segregate itself from other courses loses at once its importance in the eyes of the student. There must be a relation between courses of study, or at least an interrelation by means of other courses. It is upon this cohesion that the art or mechanical drawing teacher may be expected to develop an interest in a course of study.

Human beings are individuals of characteristics as different as their physiques. To expect an equal interest on the part of all students in an individual study is a mistake. The degree of interest will vary with the separate types of students, but if there is a proper relationship between courses it will have a direct bearing upon the interests of the student. It is this apparent lack of relationship which causes the neglect of certain courses on the part of the student.[1]

The art and mechanical drawing work must meet the needs of the students in the differentiated courses; in other

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[1] Thesis for Degree of Bachelor of Architecture by Thomas K. Fitzpatrick, 1933.

words, it should be motivated. The subject matter must touch the lives of the students so intimately and the different vocational and academic courses so positively, that the need will be obvious.

There must also be an obvious direction to the trend of study, and each art or mechanical drawing course as a prerequisite, should point to a future art and mechanical drawing course slightly more complex as well as interesting.

I believe it must be accepted in this case that curricula is unavoidable. Even so, sequence of studies can be improved by varying the relationships of subjects.

A great deal may be accomplished by inquiring into and carefully weighing the attitude both in practice and opinion of other Junior and Senior High Schools, art schools and colleges and educators.

Educators now are realizing that the youhg man or woman of today and of the future must have a training vastly more extensive and exact than his predecessors, in order to progress or even hold his own in the profession. Constantly changes must be made to give the student a chance to round out his fundamental training by means of a wider range of subjects a knowledge of which will help his chances of success as an art school, university, or college student.

The Junior high school boy or girl who carries his art interest into High school still meets an obstacle to his progress, in the form of college entrance requirements. The

pupil in the high school who has up to this period done well in the art class is now faced with the demands of college entrance. Today college entrance demands about all of the time that a high school pupil has available, and out of the fifteen entrance units none, or certainly not over one, will be allowed in the field of art. Yet many colleges offer courses in fine arts and it is an actual fact that today a man or a woman may study art in college and use art credits for graduation on a level of achievement much lower than that attained in the gifted high school pupils product.

Art education in the high school suffers still another stigma which should likewise be removed. This stigma comes from a lack of information on the part of those who are responsible for spreading it abroad. Many people, including some school officials, still believe that art is nothing more than hand skill. A school official once said, in referring to a very gifted boy, "It's all in his fingers." Art ability or the ability to produce art only had been considered. The contrary is of course true. Psychologists have shown conclusively that there is a positive correlation between a high quality of art talent and intelligence.

So positive is this correlation that Goodenough[1] has actually measured intelligence entirely through a study of the

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[1] Goodenough, F., The Measure of Intelligence by Drawings.

drawings made by individuals.[1]

Another Junior or Senior high school problem confronting the Art Department is the very important one of credits.

Until the colleges and universities recognize high school art and drawing courses for credit on entrance examinations or on certificate, the tendency will be to retard credit recognition in the secondary school itself. Schools often overcome the problem by dodging it. They offer courses for college, and courses for students not planning to continue their education. Thus, the good student, with excellent brain capacity, who should have a broad general and cultural training preceding the higher education, finds it impossible to devote any time to the question of art and draftsmanship.

These facts being true, the Junior and Senior high school courses should be planned so that every student in these schools would have an opportunity to elect the course in art or mechanical drawing which he desires, and which he is capable of studying.[2]

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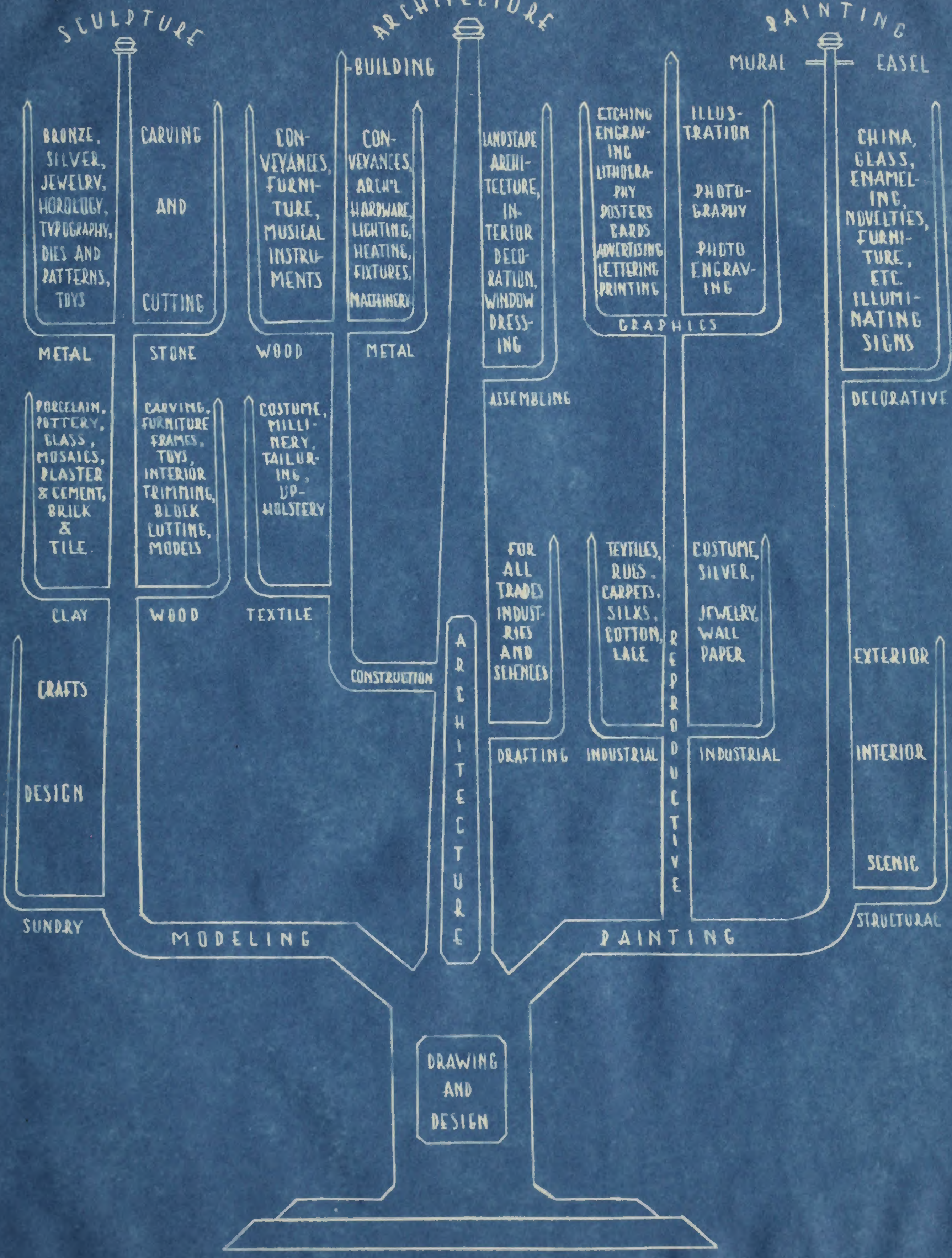
[1] Art Education in Principle and Practice, Page 22 & 23

[2] Art Education in the U. S., by Royal B. Farnum, Bulletin No. 38, Government Printing Office, Washington, 1926.


SCULPTURE
ARCHITECTURE
PAINTING
BUILDING
MURAL
EASEL
BRONZE, SILVER, JEWELRY, HOROLOGY, TYPOGRAPHY, DIES AND PATTERNS, TOYS
CARVING AND CUTTING
CON-VEYANCES, FURNI-TURE, MUSICAL INSTRU-MENTS
CON-VEYANCES, ARCH'L HARDWARE, LIGHTING, HEATING, FIXTURES, MACHINERY
LANDSCAPE ARCHI-TECTURE, IN-TERIOR DECO-RATION, WINDOW DRESS-ING
ETCHING ENGRAV-ING LITHOGRA-PHY POSTERS CARDS ADVERTISING LETTERING PRINTING
ILLUS-TRATION PHOTO-GRAPHY PHOTO ENGRAV-ING
CHINA, GLASS, ENAMEL-ING, NOVELTIES, FURNI-TURE, ETC. ILLUMI-NATING SIGNS
METAL
STONE
WOOD
METAL
ASSEMBLING
GRAPHICS
DECORATIVE
PORCELAIN, POTTERY, GLASS, MOSAICS, PLASTER & CEMENT, BRICK & TILE.
CARVING, FURNITURE FRAMES, TOYS, INTERIOR TRIMMING, BLOCK CUTTING, MODELS
COSTUME, MILLI-NERY, TAILOR-ING, UP-HOLSTERY
FOR ALL TRADES INDUST-RIES AND SCIENCES
TEXTILES, RUGS, CARPETS, SILKS, COTTON, LACE
COSTUME, SILVER, JEWELRY, WALL PAPER
CLAY
WOOD
TEXTILE
CONSTRUCTION
ARCHITECTURE
REPRODUCTIVE
CRAFTS
DESIGN
EXTERIOR
INTERIOR
SCENIC
DRAFTING
INDUSTRIAL
INDUSTRIAL
SUNDRY
MODELING
PAINTING
STRUCTURAL
DRAWING AND DESIGN

INDUSTRIES DEPENDENT UPON THE ARTS

THE SCOPE AND DISCUSSION OF AVAILABLE POSITIONS IN THE FIELDS OF ART, MECHANICAL DRAWING AND ARCHITECTURE

FOR THE PURPOSE OF

GUIDANCE FOR THE PROSPECTIVE ARTIST, DRAFTSMAN OR ARCHITECT

ART PROFESSIONS

The enjoyment of art comes through the impulse to create or contribute, and through appreciation of the work of others.

The fine arts stir the emotions; aesthetic taste is satisfied through skillful work in architecture, sculpture, painting, music, poetry, drama, and dancing, as well as in many of the crafts which include pottery, glass making, jewelry, art metal work, embroidery, and the graphic arts.

The useful arts contribute to man's comfort and taste by providing artistically designed household furnishings and numberless other products manufactured for retail trade.

The industrial or decorative arts are a combination of the fine arts and the useful arts. French furniture, particularly in the periods of Louis XIV, XV, and XVI (1643-1793) shows the influence of fine art as adapted to utilitarian furnishings. The English furniture styles in the periods (1710-1806) of Adam, Chippendale, Sheraton, and Hepplewhite, are other examples. In the past century original contributions apart from new styles in women's clothing, textiles, and

American architecture, have been slight; artists have relief on the classical motifs of the old world for inspiration. In America today art of high order is being expressed in manufactured goods, and in the creation of twentieth-century styles and fashions. When artistic importations ceased temporarily with the World War, our own designers developed, and we are becoming less dependent upon European sources for artistic production.

("Art", as hereinafter used, concerns painting, sculpture, design, graphic arts, crafts, photography, and decorative arts.)

STATISTICS.[1]

According to the 1920 census, there were nearly 175,000 artists in the United States, including sculptors, teachers of art, designers. draftsmen, engravers, goldsmiths, jewelers, lithographers, and photographers. About one-fifth of these were enumerated as women.

THE FIELD OF ART

Art is the expression or feeling of emotion in appropriate concrete form, with skill in technique and design as determining factors of excellence.

All art expression may be divided into five large subdivisions. These are: painting, or graphic art; sculpture, or glyphic art; architecture, or building art; industrial, or manufacturing art; and commercial, or business art.

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[1] Art, Guidance Leaflet No. 20, U.S.Department of the Interior, Office of Education, U.S.Government Printing Office, Washington, 1932.

OPPORTUNITIES

KINDS OF PAINTING

Painting is the art of graphic expression in which objects seen or imagined are represented and in which ideas and feelings are given form by laying colors on a surface.

Many different kinds of subjects have been used by artists for their pictures; people, scenes, on land and water, historical events, symbolic ideas, home life, animals and inanimate objects. These afford subjects for pictures that may be classified as portraits, as landscapes, and as marine, historical, religious, genre, animal and still life paintings. Often these subjects are interwoven and a painting concerns more than one of them; animal studies form part of a landscape; portraits are painted in historical and genre pictures.

The materials used in painting are numerous and varied. Oil painting is done on a canvas and on wood. The colors are ground in oil and thinned with turpentine. Water color painting is done on parchment or on paper. The colors are mixed with gum and glycerine and are diluted with water. Frescoe painting is done on plaster, the colors being mixed with water and powdered lime, and applied to the new plaster while it is still wet. Tempera or distemper painting on plaster is done on paper with colors consisting of a pigment and pipe clay pressed in the form of a crayon. Stained glass painting is painting done on glass which is subsequently baked or fired to fix the colors. The small sections of glass are fitted

together in grooved leads. Mosaic work is not strictly painting. It consists in setting cubes of colored marble and glass into cement plaster.[1]

The painter represents what he sees by line, light and shade, and color, either on canvas or flat surfaces, using oils, water colors, tempera, colors, or pastels. His aim is the pictorial and to this end he uses any or all varieties of technique, media, perspective, values, tone, and composition. His most important natural gift is ability to present subjects as he sees them. Painters are usually dependent for their income upon the sale of their works and take comissions for original paintings. When well known, their annual incomes may run very high; some portrait painters receive as much as $10,000 for a single picture.[2]

TYPES OF SCULPTURE

Sculpture is the art of glyphic expression embracing statues and decorative ornament, in which ideas of reality or of the imagination are given solid form in plaster or in hard material by modeling, casting, or carving. Sculpture is modeled from such plastic materials as clay and wax. It is carved from stone, marble and wood, and cast in bronze and other metals and in plaster. Some sculpture is made "in the round," and is to be viewed from all sides. This type of

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[1] Art Course of Study for the Junior High School, City of Baltimore, Department of Education, 1928, Pages 25 & 26.

[2] Art Guidance Leaflet No.20,U.S.Department of the Interior Office of Education, U.S.Government Printing office,Washington,1932

of sculpture is also called "free-standing". When sculpture is made in such a way that the forms are attached to a solid surface or ground, it is called relief sculpture. There are several kinds of relief sculpture; cameo or raised relief work may be further sub-divided into high relief, in which the forms project strongly from the background; bas relief, in which the forms project but slightly from the ground; and outline relief, in which only the outline of the forms project. In intaglia or sunken relief, the ground projects from the sculptured form which is hollowed out, or in reverse.

The usual subjects chosen for works of art in sculpture are: the human figure, figures of animals; men and animals; symbolic figures (untaur, harpic, griffon); and architectural and other decorative ornament.[1]

Sculpture:- The sculptor first models his design in some soft material of clay or wax, and later casts his work in bronze, or chisels it in stone, sometimes with the aid of assistants. Scuoptors are employed to do projects for cities, states, governments, private corporations, and individuals, often on a competitive basis.

Illustration:- The graphic arts which include drawing, engraving, and printing in all forms, were first practiced by the scribes and illuminators in the fifteenth century. In

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[1] Art Course of Study for the Junior High School, City of Baltimore, Department of Education, 1928, Page 27.

order to multiply their works they drew on wood blocks and cut away the blank portions of wood leaving only the raised design, which when inked produced an impression or print on paper; this was known as wood cutting or block printing. Engraving of metal was the next development. The engraver cut lines into metal surfaces, inked the plates, and rubbed off surplus ink, leaving the indentations filled. When paper was applied and rubbed with sufficient force for the ink to adhere to the paper an impression or print was produced. Another form of metal engraving is known as dry-point, where the engraver instead of cutting a sharp line leaves little furrows of metal upturned to hold the ink; fewer copies can be reproduced. Etching utilizes metal in a different manner; the etcher covers the metal plate with an acid-resisting varnish which is allowed to dry; with an etching needle he then cuts through the varnish to the metal and immerses the plate in an acid which bites through where the metal is exposed. When the plate is cleaned, acid lines remain which are filled with ink, the surface cleaned, paper applied under pressure and the print results when the ink adhers to the paper. Lithography is flat surface printing invented in 1796 by Alois Senefelder, an impoverished playwright and musician, who wished to reproduce inexpensively his plays and music. He tried writing on paper with a greasy ink, transferring this drawing to a polished stone, and after applying a clean paper to the stone, peeled off a print of the original

drawing. The process is essentially the same today; ability to draw is essential.[1]

Commercial Art:- is the art made use of in advertising, to popularize ideas of products, and to give aesthetic pleasure by means of lettering, pictures, and the display of goods in accordance with the principles of design.

Lettered and illustrated advertisements include such things as posters, street signs and billboards, show cards, car cards, greeting cards, announcements, stamps, and stickers; newspaper advertisements, magazine and trade journal advertisements, separate advertisements (circulars and handbills, braodsides, folders and leaflets, calendars; pamphlets, catalogues, and other books); illustrations; cartoons; trade marks and emblems; letterheads, billheads, and envelopes; containers (magazine covers and sheet music covers, book covers, and book jackets); cartons and other containers.[2]

Commercial illustrating is one of the most important fields of art in the United States. All forms of illustrations for books and magazines must be adapted for printing; such work includes all of the above specialties, particularly drawing in pencil, pen and ink, or brush. Commercial illustration is used for advertising in the daily newspapers, magazines, and periodicals, cartoons, comic strips, features,

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[1] Art, Guidance Leaflet No. 20, U.S.Department of the Interior, Office of Education, U.S.Government Printing Office, Washington, 1930.

[2] Art Course of Study for the Junior High School, City of Baltimore Department of Education, 1928, page 32.

or pictorial illustration for books. Creators of daily comic strips are among the highest paid of the newspaper staff.

Design - Design is fundamental to art. The designer is responsible for new creations in costumes, textiles, jewelry, furnishings, ceramics, printing, machines, stage settings, window decoration, stained glass, and innumerable manufactured products. It is said that not more, but more gifted designers are needed. Compensation is most often on a salary basis, although many designs are purchased from free-lance artists. Some idea of the extent of industrial art work may be gathered from the mention of the following industries which engage artists; the salary data is selected from Richard's "Art in Industry."

Table 1 - COMPENSATION OF DESIGNERS IN INDUSTRY

Nature of work	Beginners per week	Experienced designers per year	Free lance (each design)
1	2	3	4
COSTUMES			
Custom dressmaking-model making	$35	$10,000-$20,000	
Wholesale dressmaking	50	25,000	
Blouses	20	12,500	
Cloaks and suits (wholesale)	35	15,000	
Retail millinery	12	7,500	
Wholesale millinery	35	3,750	
TEXTILES			
Printed silks		1,200- 3,600	$5 - $85
Printed cottons	$12-$18	2,000 - 3,500	10 - 10
Cretonnes	12-20	6,000	25 - 60
Woven pattern silks		2,759 - 5,000	
Wool and cotton tapestries		1,800 - 5,000	
Figured pile fabrics	25	3,000 - 5,000	
Carpets and rugs	20-25	1,250 - 6,750	
Embroideries and laces	25	1,500 - 7,000	
Woolens		5,000	
JEWELRY			
Fine jewelry		1,750 -10,000	1 - 5
Medium and low grade jewelry		4,500 - 5,000	
Silverware	15-18	2,000 - 5,000	
FURNITURE			
High grade furniture	30-60	5,000 - 6,000	5 - 40
Medium grade furniture		3,500 - 5,000	10-100
MISCELLANEOUS			
Lighting fixtures		1,800 - 7,000	
Wall paper		2,500 - 4,000	10 - 50
Printing		759 -10,000	25 - 100

Lettering - Perhaps one of the surest ways to find first employment is through ability in lettering. If a student knows two or three alphabets well, he can readily find work in department stores, advertising agencies, drug stores, and other retail stores which display goods with a legend on a card or poster. There are many calls for sign painters of all kinds, and high grade work requires skill and artistic taste. Some beginners receive an income from this type of work while they are gaining recognition as painters or illustrators.

Handicraft - Hand made articles and objects d'art are in demand by connoisseurs; such work included embroidery, needlepoint, lace, batik, tooled leather, bookbindings, wood carvings, craft jewelry, hand-loomed textiles, pottery, baskets, toys and novelties. In hospitals this work is known as occupational therapy; hospital aides are employed to teach this work at the bedsides of convalescent patients in Army, State, mental and tuberculosis hospitals. The work is curative in nature and with three aims - diversional, handicraft, and prevocational; salaries in addition to maintenance average about $1,000 annually, but in governmental hospitals vary from $1,150 to $1,560. Other craftsmen who specialize in jewelry, silver, stained glass, pottery, or bookbinding may earn from $3,000 to $10,000 annually.

Photography - While anybody can take pictures with a camera, only an artist can produce a portrait or landscape worthy of mention. Aside from arrangement and exposure the professional photographer knows the techniques of treating the negative (developing and retouching), and producing an artistic print. Tinting requires artistic skill. Color photography is under experimentation. Pictorial photography differs from other branches in that it uses photographic processes for personal artistic expressions. Photo-engraving and half-tone processes include the preparation of photographs for printing; this photo-mechanical process is done on copper or zinc plates which are first subjected to "rough etching" and then to "fine etching" which calls for artistic taste and judgment of the craftsman.

Interior decoration - The professional decorator is a combination of artist and merchant. An expert knowledge is required of styles in furniture, wall paper, lighting effects, and color harmony; good taste is necessary in choosing materials, woods, paints, textiles, draperies, and rugs, and business ability is essential for successful work. Interior decorators open their shops or are employed in furniture and department stores, to assist patrons in making selections from stock or to assume complete responsibility for outfitting a home. Many women have been successful in this field. Architectural firms often provide for interior decoration and furnishings. Some decorators purchase old homes which they remodel or restore and

resell at a good profit.[1]

Industrial Art - is the art made use of by manufacturing in which skill and creative ability are employed either in the conceiving or in the forming of a product of utility in conformity with the principle of design.

Industrial products may be classified according to the material from which they are made. Some of these classifications are: fabric products, metal products, glass products, and ceramic products. Under the heading "fabric products" come the designing and making of materials, as felt, textiles, and net. Felt is made of matted fibers of wool, or wool and fur or hair, fulled or wrought into a compact substance by rolling and pressure, but without spinning or weaving. Textiles are woven fabrics. Threads used in weaving are usually of wool, cotton, linen, and silk. Warp threads run lengthwise in the woven fabric, weft, or woof, threads crosswise. The many different warp in which it is possible to interlace threads produce different weaves such as plain twill, satin, sateen, basket. rib and diagonal. In addition to these there is woven pattern with variation in weave alone, such as is often seen in table cloths, in brocaded silks. and in furniture coverings; with variation in color, as in all textiles where design is obtained by weaving

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[1] Art, Guidance Leaflet No. 20, U. S. Department of the Interior, Office of Education, U.S.Government Printing Office, Washington, D.C., 1932.

different colored threads, such as in gingham, in tapestries, in Roman striped ribbons and blankets. Sometimes a combination of these two different weaves and different color is made in pattern weaving, and we have "Jaquard" designs in textiles. This name came for the man who invented a loom with many heddles for pattern weaving.

Another way of attaining textile design is by printed surface patterns. In early times these were made by hand, by block printing. Later, machinery was invented to do the printing by similar means of rollers which stamp the designs on fabrics by a process similar to the methods used in hand block printing. This process may be limited to the application of a single color to one side of the material or it may involve the use of as many as twenty different colors in an intricate design. In either case the stamping may be done by one passage of the cloth through the printing machine. Many of our patterned silks and cottons today are printed. Patterns may also be dyed into textiles, by the use of a "resist" to the dye as in tie-dying, and batik. In tie-dying the string forms the resist, in batik the wax. Another way of obtaining textile design is by means of the decoration of plain textiles. In applique a motif cut from another textile is enriched with needlework, a motif being worked on the fabric with threads. In drawn work threads of the material to be decorated are drawn and the cross threads united

to form a pattern. When threads are loosely interwoven to form an open weave meshed fabric the product is called "net." Knitted and crocheted fabrics come under this classification, both hand and machine made. Another important sub-division is lace. Lace may be hand knitted or crocheted, or made with a needle, bobbins, or by machinery. Some of the best known types of hand-made laces are Cluny, Valenciennes, point, and pillow, all of which have inexpensive modern imitations made by machinery.

Another important branch of industrial art closely connected with fabric products is costume designing and manufacture. Under this heading come all garments worn by men, women and children; suits and uniforms, coats and dresses, underwear, furs, hats and the accessories of costume such as stockings, collars, ties, belts, ribbons, trimmings and flowers.

Metal products are easily classified according to the material from which they are made. Important are gold, platinum, silver, copper, brass, bronze, pewter, iron and steel. Jewelry and watch cases are usually made of gold, platinum and silver, and the last named is also largely used for making table silver. Pewter, an alloy usually of tin and lead, was formerly much used for domestic utensils such as candlesticks, spoons, dishes, porringers, drinking vessels, tankards, and pitchers. Copper and brass, and bronze, which are alloys of copper, are used extensively in the making of musical instruments, lighting fixtures, grill work, balustrades,

fences and gates, and for builders' hardware such as hinges, knobs and handles. Iron and steel are used for many of these same purposes, and, as well, for building automobiles, locomotives and other machines and their accessories, and for the making of tools, firearms and armor.

Glass is a substance made by fusing together various substances, such as sand and alkali, as potash or soda, and some other base, as lime or lead oxide. It is blown, pressed, cast, and cut to a great variety of shapes. Glass is often colorless, but various colors may be imparted to it by the addition of certain metallic oxides. Glass is shaped by blowing, by inflating it when heated to a viscid state, by means of a tube. It is pressed into molds while still plastic or cast by pouring into moulds. Glassware is sometimes decorated by "cutting" or grinding and polishing the surface. Decoration of the surface of glass is also obtained by etching, in which lines are eaten in or corroded by means of some chemical agent, and by sand-blasting. Plate glass is cast in thick plates and flattened by heavy rollers. It is used for mirrors, for show cases, and for windows. Most common window glass is now made by first blowing the glass in a cylinder which is then split longitudinally and opened. In ground glass the transparency of the surface has been destroyed by making it rough, as by grinding or etching.

Ceramic products include all articles made of clay in whole ar in part and baked or fired in an oven callen a kiln, such as dishes, vases, tiles, and stone-ware. Pottery may be glazed or unglazed. Glaze is the vitreous coating which renders the surface smooth, glass-like or glossy. Some pottery is fried only once, such as stone ware and porcelain. Stone ware is a common, heavy kind of pottery, such as is seen in crocks and jugs, etc. Porcelain is a very fine kind of ware made of the purest white clay. Under the heading of twice-fired pottery came such ware as faience and majolica, which have an opaque glaze; china and belleek which have transparent glaze. The names of these kinds of ceramics come from the names of the places where this ware originally was made. Terra cotta is a kind of faience, but of coarse material. An interesting modern use of ceramics is an application on metal, such as for sanitary ware, including bathroom and other plumbing fixtures.[1]

Teaching of art - Art teachers are in demand for three different phases of instruction - (1) the practice of art or studio teaching; (2) theory, history, appreciation, and cultivation of art; and (3) supervision of art instruction in the public schools. In a recent survey, May 1931, the Median salaries of 868 directors or supervisors of art in city school systems varied from $1,450 to $4,484 annually according to the

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[1] Art Course of Study for the Junior High School, City of Baltimore, Department of Education, 1928, Pages 28, 29, 30.

size of the city, while those of 286 assistant directors or supervisors ranged from $1,500 to $2,633 annually. The salaries varied as follows:

	Supervisors of Art 1930 - 1931		Assistant Supervisors of art, 1930 - 1931	
Size of City	Number	Modian Salary	Number	Modian Salary
1	2	3	4	5
More than 100,000	85	$3,383	149	$2,644
30,000-100,000	165	2,395	49	2,117
10,000- 30,000	306	1,875	74	1,609
5,000- 10,000	212	1,696	15	1,500
2,500- 5,000	100	1,450		

Archaeologist - Investigators, excavators, and research workers interested in the study of antiques continually find new material and are systematizing our knowledge of the past in art.

Curators - In art museums curators find important work which requires exact knowledge and adequate training. Relics of past ages are being displayed in local and national museums in an intelligible manner rather than as curiosities. Curators are contributing materially to our knowledge of ancient history. Museum workers, assistants to curators and teachers in educational departments are employed in museums. Catalogers of private art collections are also employed.

Art Dealers - auctioneers, appraisers, and restorers must be thoroughly acquainted with the objects d'art, appreciation, techniques, and appraisal values.

Art lecturers, critics, writers, librarians, and others who know fundamental principles of art from the standpoint of appreciation, good taste, theory and history, find employment in their respective educational fields.

[1]These fields of employment are all more or less new, therefore, in the future we may expect that out of the Junior and Senior high school art classes and out of the art schools there will come not only those who have art information and art appreciation as culture, and art skill as potential professional artists and designers, but also an ever increasing number who will find their art training received in the public schools to be a business asset.

DEGREES IN ART

The most usual degree awarded to art students is bachelor of art or bachelor of science in art. Sixteen institutions award the bachelor of fine arts degree (B.F.A.) Bachelor of Design is offered at California, Kansan and Tulane. Bachelor of painting is awarded at Bethany College and Kansas.

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[1] Art Education in Principle and Practice, Klar, Winslow and Kirby, Page 24.

Universities and colleges offering a major in fine arts

Institution	Tuition	and fees	En.1930		Deg.Awd.1930		Name of Degree
	Resident	Non-Resident	Men	Women	Men	Women	
1	2	3	4	5	6	7	8
NEW MEXICO							
University of New Mexico	51	91	---	5	---	3	A.B.
NEW YORK							
Cornell University, College of Architecture	382	382	---	---	1	1	B.F.A. 5 years
New York University, College of Fine Arts	304	304	264	943	---	1	B.F.A.
Skidmore College, Dept. of Fine and Applied Art	350	350	---	131	---	20	B.S.
Syracuse University, Col.Fine Arts	300	300	153	373	10	25	B.F.A.
NORTH DAKOTA							
University of No.Dakota Dept.of Art,	70	90	1	7	---	2	B.S.
OHIO							
Miami University, School of Fine Arts,	75	125	---	---	---	1	B.F.A.
PENNSYLVANIA							
Carneigie Inst.of Tech. College of Fine Arts	325	325	80	115	14	10	B.A.
Univ.of Pennsylvania School of Fine Arts	400	400	17	27	7	12	B.F.A.
TEXAS							
College of Industrial Arts, Dept. of Fine and Applied Art	48	48	---	243	---	24	B.S.
UTAH							
Brigham Young Univ. Art Dept.Provo(includes Music)	81	81	55	104	6	18	A.B.;B.S.
WASHINGTON							
State College of Wash. Dept.Fine Art.	20	150	38	100	1	11	B.A.inF.A.
Univ.of Wash.Col.of Fine Arts,	76	181	105	435	9	32	B.F.A.
WISCONSIN							
Milwaukee-Downer Col. Dept.of Art	200	200	---	39	---	9	B.S.in Art

Average tuition in 38 institutions, $190; degrees in art awarded in 1930, men 86; women, 380.

INDEPENDENT NONPROFIT ART SCHOOLS

(Note-These institutions do not grant degrees, are not listed in the Educational Directory (U.S. Office of Education), and are not established for profit, but offer superior training in art.)

Institution 1	Tuition 2	Staff 3	Enrollments 4
DISTRICT OF COLUMBIA			
Corcoran School of Art, Wash.	$25	6	350
ILLINOIS			
School of Art Inst.	240	70	4,662
MARYLAND			
Maryland Inst. of Art	150	45	2,625
MASSACHUSETTS			
School of the Museum of Fine Arts	200	15	350
MINNESOTA			
Minneapolis School of Art	185	14	600
MISSOURI			
Kansas City Art Inst.	135	13	535
NEW YORK			
Art Students League, N.Y.C.	136	23	2,100
Grand Central Sch. of Art	120	22	360
National Academy of Design	20	11	600
N.Y. School of Applied Design	190	11	275
Pratt Institute	160	67	651
Rochester Athenaeum & Mech. Institute	210	15	208
OHIO			
Art Academy, Cincinnati	100	13	515
Cleveland Sch. of Art	300	43	1,540
PENNSYLVANIA			
Penn. Academy of Fine Arts	200	11	276
Penn. Museum's Sch. of Industrial Art	250	40	1,300
Phila. Sch. of Design for Women	175	25	525
RHODE ISLAND			
Rhode Island Sch. of Design	100	98	392

ART SOCIETIES OF INTEREST TO STUDENTS

The American Federation of Arts (Inc.), Barr Building, Washington, D. C., was first organized in 1909, "to unite in closer fellowship all who are striving for the development of art in America, either through production or the cultivation of appreciation; to encourage and foster endeavor; to prevent as far as possible duplication of effort, and to furnish a channel through which public opinion, instrumental in securing better legislation, may find expression." It publishes the American Magazine of Art, a monthly magazine, and the American Art Annual. The latter is the only complete book of reference on contemporary American art and contains a descriptive list of schools, colleges, and academies which offer art instruction. In addition, a department of advisory service is maintained and an educational department. Traveling exhibitions are sent out; illustrated talks on art are circulated; and a package library is maintained for the use of those seeking informational data on art.

The Federated Council on Art Education (Secretary, Leon L. Winslow, Director of Art, Board of Education, Baltimore, Maryland), consists of 18 representatives of 6 art organizations. The council acts as a clearing house, undertaking to make careful studies of problems of art education which have confronted the various associations.

The College Art Association, 20 West Fifty-eighth Street, New York City, circulates traveling exhibitions, offers scholarships for college graduates, supports research work, and publishes The Art Bulletin, Parnassus and Eastern Art.

American Artists' Professional League (Secretary, Wilford S. Conrow, 154 West Fifty-seventh Street, New York City), was organized to promote the interests of contemporary American artists through collective action. The league publishes Art Digest.

The Archaeological Institute of America, New York University, New York City, publishes the American Journal of Archaeology (quarterly), and a popular monthly magazine, Art and Archaeology.[1]

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[1] Art, Guidance Leaflet No. 20, U. S. Department of the Interior, Office of Education, U.S.Government Printing Office, Washihgton, D. C., 1932.

ARCHITECTURE AS A CAREER[1]

The modern architect plans and designs buildings for specific purposes - city and country residences, office buildings, shops, factories, hospitals, churches, buildings of every sort, and sometimes monuments. This of course involves the ability to make sketches expressive of his ideas and from them to develop the scale drawings on which estimates are obtained. His first considerations are the utilitarian purpose of a building and its economic functions. Through the study of masses, proportions, wall areas, fenestration, etc., and through the proper selection of materials, he builds into structures an added quality - beauty.

He prepares specifications describing in detail materials and methods of construction. He prepares detail drawings and occasionally models, procures estimates from building contractors, has charge of letting contracts, and supervises the construction of buildings which he has designed. During the progress of the work he checks the contractors' requisitions, issues certificates for payments, checks the final bills, and centifies to the completion of the building.

As coordinator of activities involved in the designing and construction of buildings, he correlates the various engineer-

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[1] Architecture, Guidance Leaflet No. 10 (revised) U.S. Department of the Interior, Office of Education, U.S.Government Printing Office, Washington, D.C., 1932.

ing services which insure that a building will function properly, such as structural, heating and ventilating, sanitary, and electrical engineering.

Two qualifications for architects, are graded with equal weight on State examination papers: (1) The applicant's ability to plan a building with regard to its practical, logical, and economical arrangement; the comfort and convenience of its occupants; the safe-guarding of their life and health; and the demands of structural science; and (2) his ability to express these requirements by a building which will logically meet the conditions imposed, in an orderly and harmonious manner, so that the various parts will be properly related to the whole composition, and will produce a pleasing aesthetic effect consistent with the purpose of the building.

To be successful the architect must have an intimate knowledge of a score or more of the building trades, of the costs, characteristics, and uses of many building materials; of plumbing, heating, and ventilating, and electric wiring; of finishing, decoration, and furnishing; of landscaping and community planning; of construction engineering; and of business management. He must be familiar with and conform to the local building codes, local zoning and fire prevention ordinances, and to State Laws in such matters as factory planning. He may also be called upon to advise on contractual relationships and financial problems of sound business investments.

The successful architect is a student of human nature, a man of infinite patience and tact in his dealings with his client, combined with business acumen, inventive capacity, and creative ability as an artist. Few professions offer a wider variety of interests or require a more versatile type of mind and a greater diversity of knowledge than does that of the practice of architecture.

OPPORTUNITIES

The young architect generally gets his first practical experience as draftsman for an established architect, and later he may begin practice for himself. Obviously the demand for an architect's services varies with the volume of building construction. During the World War construction was light, but the demand during the past decade has been heavy until the current depression, when it has practically ceased. As a profession, architecture is one of the most affected by hard times; generally men build for their personal pleasure or profit; except in unusual housing crisis, they are not forced to build. Few women enter the field for various reasons, but women have done notable work in domestic architecture as well as in the building of private schools; interior decoration is also a side line in which they are specially well qualified., According to the 1920 census there were 18,185 architects of whom 137 were women; possibly not more than two-thirds of these are recognized by the profession, others being architectural draftsmen. The architectural

profession needs capable, educated, and progressive young men and women endowed with artistic talent.

COMPENSATION

The architect does not advertise for the purpose of self-laudatory publicity. His charges are made to his client, only, and it is unethical to receive commissions, fees, or favors from a contractor or other interested person. The accepted minimum charge for his services. based upon the total cost of work complete, is about 6 per cent. On residential work, a higher charge is proper, often 10 per dent. While salaries of draftsmen vary, in the larger cities the young college graduate in architecture may start with a salary of $30 to $40 per week, while the experienced draftsman, skilled in either design or practical details, may receive $100 per week. Earnings of a young architect in practice for himself are irregular; on a $10,000 residence he may receive a gross fee of $1,000, while a $100,000 office building would bring in $6,000; considering office expense, less than half of the fee is net profit. The architect is also entitled to compensation for articles purchased under his direction, and where he is not otherwise retained, consultation fees are paid for professional advice. In many instances "cost plus" is charged; a fixed fee or monthly retainer is agreed upon, and the client pays the cost of drawings and specifications.

REGISTRATION

Registration to practice as an architect is required in 32 States and territories and the District of Columbia - Arizona, California, Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Montana, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin - and registration laws are pending in Missouri.

Registration requirements vary in the different States, some grant registration without examination, on the basis of graduation from an architectural school followed by three years' practical experience; or by written examination, on the basis of graduation from high school, two years in college, and five years of practical experience. Further details may be secured from the National Council of Architectural Registration Boards, 175 West Jackson Boulevard, Chicago, Illinois.

THE AMERICAN INSTITUTE OF ARCHITECTS

The American Institute of Architects (A.I.A.), the national organization of the architectural profession, The Octagon, Washington, D. C., was founded in 1857 to unite in fellowship the architects of the United States and to combine their efforts so as to promote the aesthetic, scientific, and practical efficiency of the profession. The Institute is composed of individual practicing architects. architects en-

gaged in professional education, and architectural draftsmen grouped locally into 67 chapters. Its government is based on the chapter as a unit. Its publications include The Octagon, a monthly bulletin.

In addition to the Institute chapters, State, county, and city associations have been organized in many parts of the country to group together architects for the promotion and improvement of the profession.

THE ASSOCIATION OF COLLEGIATE SCHOOLS OF ARCHITECTURE

The Association of Collegiate Schools of Architecture was organized in December, 1912, for the purpose of promoting the efficiency of architectural education in America. It has no permanent address, since the officers change from year to year, but current information may be obtained through the American Institute of Architects. Schools are admitted only when it has been demonstrated that they meet the standards of the association. The 29 schools which are now (1932) members are indicated in the table with an (#).

TRAINING

Although it is still possible for students to enter an architect's office as "tracer" and work their way up in the drafting room, it is becoming less and less probable that such students will make outstanding architects without special training. It is increasingly difficult to acquire necessary experience in an office where the turning out of current work is of primary consideration. The Beaux-Arts Society, however,

conducts schools of design under direction of practicing architects and certain extension courses are available to students who are unable to attend schools of architecture. The best preparation for the profession is gained in the approved schools of architecture, supplemented by practical experience and foreign study if possible.

THE SCHOOLS

Twenty-nine schools or colleges are members of the Association of Collegiate Schools of Architecture; the oldest is the department of architecture established at Massachusetts Institute of Technology in 1865.

Admission requirements - The standard of admission to the course in architecture in the approved colleges is 14 high school units distributed as follows: English, 3; alegbra through quadratics, 1½; plane, solid, and spherical geometry, 1½; physics, 1; history, 1; foreign language, 2; and electives 4. If chemistry is not offered for admission, it should be taken in college.

Course of study - Architectural design is taught on the basis of problems requiring solution; before graduation a student must be able to solve problems concerning single buildings or groups of buildings or other compositions of equal difficulty. Subjects under this head also include the theory or elements of design or architecture, allied arts, and decorative landscape and civic design.

Construction takes up the theory of stresses, structural

design, masonry, carpentry, working drawings, heating, ventilation, fireproofing, specifications, illumination, sanitation, and others; the engineering courses form an extension of these subjects including collateral and related courses.

History includes the historical development of architecture with research work and drawing, history of ornament, painting, sculpture, civilization, and other subjects.

Drawing included (1) pure free-hand drawing in various media from objects and nature, 12 credits; and (2) descriptive geometry, shades and shadows, and perspective, 4 credits. Drawing from life and modeling are desirable for architects.

Requirements for degree - a minimum of 120 credit hours is required for the bachelor's degree in architecture, 1 credit hour being equivalent to 3 recitation periods per week for 15 weeks; 5,400 actual clock hours of work are required over a period of four years. The prescribed course in architecture includes:

(a) General or academic subjects totaling 24 credits - English, 4; foreign language, 4; mathematics, 4; science 4; and additional subjects 8; (b) professional or technical subjects totaling 86 credits - design 30, construction 16, history 8, drawing 16, and additional subjects 16; and (c) optional subjects - 10 credits.

The prescribed course with architectural engineering as an option included: (a) General or academic subjects totaling 26 credits - same as above except that analytic geometry

and calculus must be included; (b) professional or technical subjects totaling 72 credits - design 16, construction and engineering 36, history 8, drawing 12; and (c) additional or related subjects - 22 credits.

COLLEGE EXPENSES

The average cost of tuition in 49 architectural schools is $210 annually, while the range is from no tuition in the University of Oklahoma to $500 annually in Massachusetts Institute of Technology. Estimating the cost of board at $1 per day, of room at 50 cents per day, of laundry at $1 per week, and of books and incidentals at $49, the minimum expense for professional training in architecture is approximately $700. This amount does not include personal expenses such as travel, clothing, amusements, and other items which depend entirely upon individual thrift and taste.

Estimated students budget for one year in an architectural school

Tuition	$210
Board	270
Room	135
Laundry	36
Incidentals, books, etc.	49
Minimum expense	$700

SCHOOLS OF ARCHITECTURE, 1932

Architectural schools	Tuition and fees	Architecture 1930		Architectural engineering 1930	
		Enrollments	Degrees	Enrollments	Degrees
1	2	3	4	5	6
ALABAMA					
#Alabama Polytechnic Inst. School of Architecture	$145($95)	92	5	45	3
CALIFORNIA					
#Univ. of California, School of Architecture	175 (25)	184	15	(2)	(2)
Univ. of Southern California, School of Architecture	285	121	8		
CONNECTICUT					
#Yale Univ. School of Fine Arts, Dept. Architecture	300	121	8		
DISTRICT OF COLUMBIA					
#Catholic Univ. Depat. of Architecture	300	29	5		
George Washington Univ. Dept. of Fine arts	264	92	7		
Howard Univ. Dept. of Architecture (colored)	148	56	2		
FLORIDA					
Univ. of Florida	140 (40)	55	8		
Univ. of Miami	225	20			
GEORGIA					
#Georgia Sch. of Tech.	203 (128)	166	18		
IDAHO					
Univ. of Idaho	105 (45)	10	1		
ILLINOIS					
#Armour Inst. of Tech.	265	159	17		
#Univ. of Illinois	75 (50)	258	33	234	37
INDIANA					
Rose Polytechnic Inst.	180 (155)	---	---	16	3
#Univ. of Notre Dame	230	83	8	(2)	(2)
IOWA					
Iowa State College of Agri. & Mechanic Arts	150 (116)	62	10	132	20

SCHOOLS OF ARCHITECTURE, 1932(cont)

Architectural schools (college grade)	Tuition and fees	Architecture 1930		Architectural engineering 1930	
		Enroll-ments	Degrees	Enroll-ments	Degrees
1	2	3	4	5	6
KANSAS					
#Kansas State Coll.of Agriculture	$105($76)	86	6	51	4
#Univ. of Kansas	81(56)				
LOUISIANA					
Tulane University	190	54	8		
MASSACHUSETTS					
#Harvard University	400	137	25		
#Mass.Inst, of Technology	500	220	45	67	14
MICHIGAN					
#Univ.of Michigan	158(118)	253		63	
MINNESOTA					
#Washington University	276	134	28	(2)	(2)
MONTANA					
Montana State College	155(79)	24	6		
NEBRASKA					
Univ. of Nebraska	125(75)			56	6
NEW HAMPSHIRE					
Univ.of New Hampshire	250(75)			23	2
NEW JERSEY					
#Princeton University	150	75	7		
NEW YORK					
#Columbia University	400	110	15		
#Cornell University	350	184	23		
#New York University	300	384	1		
#Syracuse University	309	73	12		
NORTH CAROLINA					
No.Carolina St.Col.	156(136)			73	5
NOERH DAKOTA					
No.Dakota Agri.Col.	80(58)	50	4	14	0

SCHOOLS OF ARCHITECTURE, 1932 (cont.)

Architectural schools	Tuition & fees	Architecture 1930		Architectural Engineering 1930	
		Enrollments	Degrees	Enrollments	Degrees
OHIO					
#Ohio State Univ.	$171($76)	101	12	98	12
#Univ.of Cincinnati	215(165)	331	20	(2)	(2)
Western Reserve Univ.	320	70			
OKLAHOMA					
Oklahoma Agri.& Mech. College	56 (26)	94	7	(2)	(2)
Univ. Oklahoma	50			31	2
OREGON					
#Univ.of Oregon	229(79)	229	30		
PENNSYLVANIA					
#Carnegie Inst.	320	213	26		
#Pennsylvania St.Col.	281(131)	75	14	80	13
#Univ.of Penn.	430	300	35		
SOUTH CAROLINA					
Clemson Agri.Col.	124(85)	42			
TEXAS					
Agri.&Mechanical College of Texas	78	150	18	(2)	(2)
Rice Institute	40	71	7		
#Univ.of Texas	45			153	8
VIRGINIA					
Univ.of Virginia	275(235)	(3)			
WASHINGTON					
St.College of Wash.	150(20)	112		54	1
#Univ.of Washington	175(70)	112	7		

CIVIL ENGINEERING AS A CAREER[1]

Civil engineering, the oldest branch of engineering, dates to the construction of the pyramids of Egypt. Development of civil engineering to present-day efficiency has been accomplished by the utilization of mechanical and electrical machines and appliances which tend to speed operations, transportation, and construction. In this evolution, five main branches are outstanding, i.e., structural, railroad, highway, hydraulic, and sanitary engineering.

1. Structural engineering appeals to many college graduates who are interested in general construction operations - excavation, power plants, grain elevators, bridge or building work of all kinds, and reinforced-concrete work.

2. Railroad engineering - The survey and construction of railroads. building embankments, tunneling, laying tracks, improving terminals and signal systems. planning interurban service. and electrifying steam railroads have been important factors in the progress of the country. Many of the higher-salaried positions fall to civil engineers who manage and operate railroad systems.

3. Highway engineering, beginning with the Appian Way in Rome, has made possible our metropolitan districts.

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[1] Civil Engineering. Guidance Leaflet No. 11, U.S. Department of the Interior, Office of Education, U.S.Government, Printing Office. Washington, D.C., 1932.

Planning and paving streets, constructing viaducts, tunnels, and aids to traffic and transportation are problems of the highway engineer. The universal use of the automobile - one to every five persons in the United States - largely responsible for modern improved highways.

4. Hydraulic engineering includes design, construction, and operation of equipment pertaining to water-power development, water supply, drainage, irrigation, canals, and harbor improvements. Projects for improvement work in navigable waters - dredging, channels, and breakwaters, are supervised or approved by the Corps of Engineers, War Department, Washington, D.C., whose personnel consists largely of West Point graduates. Federal irrigation and drainage projects, the construction of diversion dams, storage works and large canal systems are carried out through the Bureau of Reclamation of the Interior Department.

5. Sanitary engineering pertains to sanitation in local communities, municipal sewerage, drainage, sewage disposal, waterworks, and methods of filtration, purification, and sterilization.

Surveying, a phase of civil engineering, is common to all of the branches, and outstanding work is done by the Geological Survey in geology, topographic mapping, and investigation of water resources. The Coast and Geodetic Survey charts the United States Coasts, surveys rivers, and determines geographic position in addition to carrying on various researches.

The civil engineer must have a working knowledge of all types of construction machinery, such as cranes, hoists, derricks, hydraulic dredges, pumps, shovels, excavators, concrete mixers and distributors, as well as materials used in construction. His chief duties are to plan, design, and supervise all classes of general construction operations in the fields above mentioned. He is also concerned with the location and maintenance of engineering projects.

EMPLOYMENT

Two-thirds of civil-engineering graduates are employed in the field of civil engineering, and another 5 per cent in closely associated field; 12 per cent enter other engineering branches, and 17 per cent do not follow engineering. Graduates are employed in the bureaus of the National Government, in State, county or city departments, gas companies, power corporations, railroads, public utilities, and private enterprises. Many are employed as city engineers, county engineers, State-highway engineers, or as civil-service employees, while others are contractors, consultants, investigators, specialists, salesmen, teachers, or research workers. Tracing and drafting is the mode of entrance for new graduates in office jobs, while many students begin as instrument men in surveying groups, or timekeepers, or inspectors aspiring to become resident engineers or superintendents. With the exception of office workers confined to the drafting rooms, civil engineering is essentially an out-of-door occupation. Nearly half of all engineers

in the United States are in civil engineering.

SALARY

In a recent study of 1,643 civil engineers, the average annual salary was found to be $4,116. According to the number of years out of college, average annual salaries appeared as follows: 28 men 1 year out of college, $1,973; 459 men, 2 years out of college, $2,360; 362 men out of college 5 years, $3,175; 207 men out 10 years, $4,151; 246 men out 15 years, $5,526; 148 men out 20 years, $6,226; 95 men out 25 years, $6,797; and 98 men out 30 years, $7,028. Twelve percent of the total studied made salaries of $5,000 to $7,500, while 7 per cent made larger salaries annually.

PROFESSIONAL ORGANIZATIONS

The American Society of Civil Engineers, 33 West Thirty-ninth Street, New York, N. Y., instituted in 1852, publishes a Code of Ethics, cooperates with other societies in the management of an employment service, and has established 96 student chapters in the colleges of civil engineering. To organize a student chapter, an engineering school must have an approved standing, grant the degree of bachelor of science in engineering or its equivalent, and require at least one-half of the student's time in junior and senior years to be devoted to purely engineering subjects.

The Society for the Promotion of Engineering Education, Pittsburgh, Pa., a research organization, has recently made an investigation of engineering education, of the objects

of engineering education, and of the fitness of the present-day curriculum in colleges.

The American Engineering Council, 26 Jackson Place, NW., Washington, D. C., aims to further the public welfare wherever technical and engineering knowledge is involved. Current information on engineer registration laws, furnished by this group, show that 25 States require the registration of engineers and architects.

THE SCHOOLS

There are 126 4-year colleges and professional schools which offer work leading to a degree in civil engineering. No organization accredits or approves schools of engineering, but some work to this end has been started by the American Society of Civil Engineers in establishing their "student chapters" in engineering schools of "approved standing", although no list of approved schools is published.

Admission requirements, with few exceptions, are alike for most engineering courses, usually based upon the presentation of 15 units from accredited high schools. The most usual requirements are: English, 3; algebra, 1½-2; plane geometry, 1; solid geometry, ½; history, science, or language, 2-3; and options, 6-7. A state institution is often required to admit all local graduates from accredited high schools in the State.

Courses of study in civil-engineering schools are not

standardized but vary in content and number with different institutions. Civil-engineering subjects in the college curriculum often include plane surveying, reinforced concrete, framed structures, foundations, public water supply, sewerage and dewage disposal, highway and railway engineering, building construction, valuation, hydraulics, water-power engineering, drainage, geodetic surveying, city planning, tunneling, and other subjects which serve primarily to teach fundamental scientific principles and engineering methods rather than to prepare men for particular fields of work. Many summer camps are conducted by the colleges.

Graduation requirements in civil engineering vary from 114 semester-hour credits in Harvard University to 196 in Armour Institute, with a median of 147. Most institutions offer very few electives. Typical requirements include mathematics, 18 semester-hour credits; physical sciences, 22; English, 10; social science, 4; physical training 4; electives, 6; and engineering subjects, 83, which includes 43 specific subjects in civil engineering. These figures are merely estimates at best, since there are more than 50 different degree requirements.

Degrees - In 1910 the Society for the Promotion of Engineering Education made the following recommendations which many of the leading institutions have adopted:

(1) A 4-year engineering course should normally lead to the degree of bachelor of science (B.S.), to which should be added

Boston University
School of Education

combined two years in almost equal parts with different institutions. Civil-engineering subjects of the college curriculum of a student include surveying, reinforced concrete, steel structures, foundations, municipal water supply, sewerage and sewage disposal, highway and railway engineering, building construction, valuation, hydraulics, water-power engineering, railways, geodetic surveying, city planning, tunneling, and other subjects which serve primarily to teach fundamental scientific principles and technique rather than to prepare men for particular fields of work. Many summer camps are conducted by these colleges.

Graduation requirements in civil engineering vary from 118 semester-hour credits in Norwich University to 198 in Armour Institute, with a median of 147. Most institutions offer very few electives. Typical requirements include mathematics, 16 semester-hours; physical sciences, [illegible]; English, 12; social science, [illegible]; drafting, [illegible]; electives, [illegible]; and engineering subjects, which include 43 specific subjects in civil engineering. These figures are merely estimates at best, since there are more than 57 different degree requirements.

Degrees. - In 1917 the Society for the Promotion of Engineering Education made the following recommendations which many of the leading institutions have since adopted:

[illegible]

(a) A 4-year [illegible] should normally lead to the [illegible] of [illegible]

[illegible]

a specifying phrase, i.e., bachelor of science in civil engineering; (2) the professional engineering degree (C.E.), should be given only to graduates who present satisfactory evidence of professional work of superior quality extending over not less than three years, and who submit a satisfactory thesis.

Not all institutions hold to these recommendations, however. and unlike other major professions, there is a diversity of practice in conferring first degrees and advanced degrees in civil engineering.

Expenses in the civil-engineering schools average about $700 per college year of 9 months. Tuition and fees average $200, ranging from small amounts in the State institutions to $500 in Massachusetts Institute of Technology. Books and Drafting instruments need not cost more than from $40 to $50. A student should find board at $1 per day, room at 50 cents per day, and should limit laundry bills to $1 per week to keep expenses at a minimum. By scholarships, cooperative courses, economical living, and self-help he may reduce his budget considerably. A typical student budget, not including personal expenditures for travel, amusements, or clothing includes:

Tuition..............	$200
Board................	270
Room.................	135
Laundry..............	36
Books, instruments, and incidentals.;..	59
Total..........	$700

CIVIL-ENGINEERING SCHOOLS

Institution	Tuition Resident	Tuition Non-resident	Enrollments, 1928
1	2	3	4
ALABAMA			
Alabama Polytechnic Inst.	$95	$145	146
Univ. of Alabama	61	106	89
ALASKA			
Alaska Agricultural Col.	10	10	7
ARIZONA			
Univ. of Arizona	20	170	65
ARKANSAS			
Univ. of Arkansas	50	80	32
CALIFORNIA			
California Inst. of Tech.	261	261	16
Stanford Univ.	344	344	38
Univ. of California	50	200	324
Univ. of Santa Clara	255	255	19
Univ. of Southern California	305	305	
COLORADO			
Colorado Agricultural Col.	82	107	32
Colorado College	223	223	11
Colorado School of Mines	40	240	
Univ. of Colorado	77	209	72
CONNECTICUT			
Yale University	400	400	67
DELAWARE			
Univ. of Delaware	118	268	36
DISTRICT OF COLUMBIA			
Catholic Univ. of America	300	300	26
George Washington Univ.	250	250	134
Howard University	136	136	6
FLORIDA			
University of Florida	40	140	69
GEORGIA			
Georgia School of Tech.	128	203	186
University of Georgia	100	100	59

CIVIL-ENGINEERING SCHOOLS (cont.)

Institution	Tuition		Enrollments, 1928
	Resident	Non-resident	
1	2	3	4
HAWAII			
Univ. of Hawaii	$50	$100	48
IDAHO			
Univ. of Idaho	45	105	35
ILLINOIS			
Armour Inst. of Tech.	270	270	146
Lewis Institute	245	245	50
University of Illinois	60	135	361
INDIANA			
Evansville College	183	183	28
Purdue University	85	185	564
Rose Polytechnic Inst.	125	150	55
University of Notre Dame	230	250	58
IOWA			
Iowa State College of Agriculture & Mech.Arts	116	156	241
State Univ. of Iowa	116	156	69
KANSAS			
Kansas State Agri.Col.	76	105	203
University of Kansas	56	81	
KENTUCKY			
University of Kentucky	60	85	56
University of Louisville	140	140	25
LOUISIANA			
Louisiana State Univ.	39	39	46
Tulane University	165	170	58
MAINE			
University of Maine	181	281	112
MARYLAND			
John Hopkins University	410	410	
Univ. of Maryland	144	206	37

CIVIL-ENGINEERING SCHOOLS, (cont.)

Institution	Tuition		Enroll-ments, 1928
	Resident	Non-resident	
1	2	3	4
MASSACHUSETTS			
Harvard University	$400	$400	61
Mass.Inst. of Tech.	500	500	209
Northeastern University	260	260	359
Tufts College	335	335	112
Worcester Polytechnic Inst.	280	280	74
MICHIGAN			
Michigan State College	129	174	106
Univ, of Detroit	225	225	95
Univ. of Michigan	123	163	232
MINNESOTA			
Univ. of Minnesota	110	140	227
MISSISSIPPI			
Mississippi Agri.&Mech. College	48	128	48
Univ.of Mississippi	41	91	
MISSOURI			
Univ. of Missouri	60	80	188
Washington University	271	271	74
MONTANA			
Montana State College	71	146	36
NEBRASKA			
Univ. of Nebraska	83	108	185
NEVADA			
Univ. of Nevada	23	173	32
NEW HAMPSHIRE			
Dartmouth College	400	400	17
Univ. of New Hampshire	150	250	45
NEW JERSEY			
Newark College of Engineer.	180	350	41
Princeton University	480	480	
Rutgers University	229	229	48
NEW MEXICO			
New Mexico Col. of Agri. and Mech. Arts	50	80	9
Univ. of New Mexico	47	238	10

CIVIL-ENGINEERING SCHOOLS, (cont.)

Institution	Tuition		Enrollments, 1928
	Resident	Non-resident	
1	2	3	4
NEW YORK			
Clarkson Col. of Tech.	$238	$238	9
College of the City of N.Y.	....	....	....
Columbia University	340	340	31
Cooper Union, NYC	....	....	....
Cornell University	320	320	352
Manhattan College	210	210	109
New York University	380	380	131
New York Poly. Inst. of Brooklyn	375	375	119
Rensaelaer Poly. Inst.	355	355	452
Syracuse University	335	335	33
Union College	365	365	107
NORTH CAROLINA			
No. Carolina State College	147	167	132
Univ. of No. Carolina	141	166	95
NORTH DAKOTA			
No. Dakota Agri. Col	63	85	42
Univ, of North Dakota	55	75	15
OHIO			
Case School of Applied Science	377	377	77
Ohio Northern Univ.	163	163	75
Ohio State University	75	181	260
Ohio University	90	90	41
University of Akron	45	165	42
Univ. of Cincinnati	168	227	236
University of Dayton		190	52
OKLAHOMA			
Oklahoma Agri. & Mech. Col.	26	56	115
Univ. of Oklahoma	13	63	64
OREGON			
Oregon State Agri. Col.	66	171	124
PENNSYLVANIA			
Bucknell University	166	166	53
Carnegie Inst. of Tech.	330	330	75
Drexel Institute	265	265	186
Gettysburg College	315	315	19
Lafayette College	420	420	62
Lehigh University	441	441	130
Penn. Military College			22
Penn. State College	134	284	223
Univ. of Pennsylvania	400	400	32
Univ. of Pittsburgh	300	300	64
Villanova College	273	273	55

CIVIL-ENGINEERING SCHOOLS, (cont.)

Institution	Tuition		Enrollments, 1928
	Resident	Non-resident	
1	2	3	4
PUERTO RICO			
Univ. of Puerto Rico	$50	$300	127
RHODEISLAND			
Rhode Island State Col.	30	80	32
SOUTH CAROLINA			
Clemson Agri.College	80	120	107
Univ. of South Carolina	77	117	
SOUTH DAKOTA			
So. Dakota State College	65	190	120
State School of Mines	60	85	57
Univ. of South Dakota	60	85	26
TENNESSEE			
Univ. of Tennessee	69	150	74
TEXAS			
Agri.& Mech.Col. of Texas	27	27	264
Rice Institute	25	25	42
Southern Methodist Univ.	239	239	100
Univ. of Texas	30	30	135
UTAH			
University of Utah	98	123	20
VERMONT			
Norwich University	283	353	67
University of Vermont	330	330	56
VIRGINIA			
Univ. of Virginia	180	260	37
Virginia Military Inst.	35	235	70
Virginia Polytechnic Inst.	78	198	133
Washington & Lee Univ.	250	250	16
WASHINGTON			
State College of Wash.	20	150	48
Univ, of Washington	76	181	72
WEST VIRGINIA			
West Virginia Univ.	66	216	87
WISCONSIN			
Marquette University	216	216	74
Univ. of Wisconsin	31	155	266
WYOMING			
Univ. of Wyoming	50	65	29

MECHANICAL ENGINEERING AS A CAREER[1]

Mechanical engineering is the science of power, its production, transmission, application, and consumption; and of machinery, its design, construction, and operation. It is basic to all other branches of engineering which employ machines for power. The civil engineer depends upon machines for the construction and operation of railroads, highways, bridges, tunnels, and public works. The electrical engineer relies upon the steam turbine, high-speed gearing, and high-capacity boilers for the production of electrical energy. The chemical engineer uses crushers, grinders, and pumps. The metallurgical engineer utilizes the blast furnace, turbo-blower, coke-oven gas exhauster, and charging machine. For the continuous production of power other engineers depend upon machines which are the products of the ingenuity of mechanical engineers.

Machines themselves may be considered in three groups, those for (1) generation of power, namely, heat engines, including steam, oil, and gas, internal-combustion engines, and hydraulic engines; (2) transmission of power, or machines for gearing, shafting, belting, and mechanical devices to change the direction, force, or character of energy created; and (3) power consumption, or machines which create no power of them-

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[1] Mechanical Engineering, Guidance Leaflet No. 13, U.S. Department of the Interior, Office of Education, U.S.Government Printing Office, Washington, D.C., 1932.

selves, but require motive force for use, such as textile machinery, sewing machines, lathes, cranes, typewriters, and others.

In mill engineering, the mechanical engineer designs and constructs industrial plants. paper mills, cotton mills, woolen mills, and mills where power is created by water or steam, transmitted by means of gears, shafts. belts, and pulleys, and consumed by machines in the process of manufacture. Iron and steel industries and machine-tool industries are also in his charge; plants for these industries occupy many acres of ground and include blast furnaces, blowing engines, hydraulic lifts, besides other machinery. Design and construction of steel ships is another important phase of his work.

Creative work in designing new machines presupposes a broad knowledge of the details of general engineering; the mechanical engineer must have an adequate knowledge of science, mathematics, physics, and the machine shop. The chief mechanical engineer or designing engineer in a large plant holds a strategic position in directing the work of draftsmen.

Efficiency is the dominating problem. While no machine can be 100 per cent perfect, the mechanical engineer is often able to improve economy of operation of machines, to reduce the cost of generation of power. to reduce friction, and to utilize waste products. Such economies not only speed up operations, but reduce the cost of production, which is the ultimate aim of machines.

BRANCHES OF MECHANICAL ENGINEERING

Power production is of primary importance embracing as it does all sources of energy, including water, wind, air, heat, steam, gas, and even sun and tide. Harnessing streams and water to turn wheels was among the first developments to obtain mechanical power. Last year in the United States alone about 13,000,000 horsepower was developed by water power; California and New York, the leading States, each developed nearly 2,000,000 horsepower. Windmills are still in use on farms. The invention of the steam engine in 1765, probably the beginning of mechanical engineering, revolutionized industry and transportation when it replaced man and animal power. Subsequent improvements in design and efficiency have culminated in the steam turbine and its substitution for reciprocating engines making possible the high speed necessary to the successful transmission of electrical energy. The invention of the internal-combustion engine 50 years ago has replaced the steam engine, where small equipment is necessary, although steam is likely to be preferred in central power plants. Combustion has recently been studied, and engineers are now able to produce in a modern plant as much energy from 1 pound of coal as was formerly produced from 10 to 15 pounds. The sun's heat has been utilized in California to develop several horsepower, and tidal power is under experimentation.

Transportation facilities have been largely developed by the mechanical engineer. About 100 years ago the railroad, a civil-engineering project, was made possible by the steam engine; since then mechanical engineers have greatly improved the design, construction, operation, and efficiency of railroad equipment, locomotives, air brakes, and steel cars. Steamships have likewise undergone such changes under the direction of the mechanical engineer that they may be likened to small cities in their completeness of design and management. The internal-combustion engine as applied to motor vehicles and airplane has again made revolutionary changes in transportation; with 27,000,000 motor vehicles on the roads in the United States alone, and an international demand for cars, the production of automobiles is now one of the largest industries. Aviation, while little past the experimental stage, is an accepted mode of transportation; air-transport routes established in the United States now total 29,763 airway miles, that is airline distances between cities, with daily service by airplane.

Industry has profited by the ingenuity of the mechanical engineer. Products are distributed both for manufacture and for trade. Basic industries such as the iron and steel industries, and machine-tool industries produce materials, tools, and machines for the manufacturing industries, which in turn produce goods for final consumption. In the heating and ventilating industries, the mechanical engineer aims to control

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CENSUS

College enrollments in 1928 revealed that 10,308 students were taking mechanical engineering, and of these 5,791 were registered in the land-grant institutions where mechanical engineering occupied first place until 1922 when electrical engineering came to the front. Although electrical engineering still holds first place, enrollments have dropped off while those in mechanical engineering have gaine. The trend appears to be for mechanical-engineering enrollments to take first place again in registrations. In the 1920 census there were 37,689 mechanical engineers, compared with 27,077 electrical engineers, and 64,660 civil engineers and surveyors employed in the United States.

PROFESSIONAL SOCIETIES

A.S.M.E. - The American Society of Mechanical Engineers, 20 West Thirty-ninth Street, New York City, with 16 professional divisions, has established local sections in 70 industrial centers throughout the country; projects aiming to standardize mechanical engineering are sponsored by the society and an employment service is maintained; 19,696 members.

S.P.E.E. - The Society for the Promotion of Engineering Education, Pittsburgh, Pa., organized in 1893, fosters educational research, discussion, and publication of professional papers; its proceedings and bulletins give current information on many phases of engineering and engineering education.

S.I.E. - The American Society of Industrial Engineers, Engineering Building, Wacker Drive, Chicago, Ill., aims to reduce waste, increase efficiency, economy, and good will in industry and commerce through the development and application of scientific principles and methods in management.

The Taylor Society, 29 West Thirty-ninth Street, New York City, is organized for much the same purpose as the S. I. E. in the interest of management.

S.E.E. - The Society of Automotive Engineers, 29 West Thirty-ninth Street, New York City, is the technical association of the world's greatest industry, covering aviation, automobiles, trucks, coaches, and tractors; student branches of the society are being established in the colleges; 7,229 members.

A. S. H. & V. E. - The American Society of Heating and Ventilating Engineers. 20 West Thirty-ninth Street, New York City, has a membership of about 2,000 persons.

A.S.H. & V. E. - The American Society of Refrigerating Engineers, 37 West Thirty-ninth Street, New York City, has a membership of about 1,200 persons.

A.A.E. - The American Association of Engineers, Willoughby Tower, Chicago, Ill., offers its members life insurance, legal service, publications, and employment service.

EMPLOYMENT

Mechanical engineers specialize in design, construction, industrial audit, research, administration, maintenance, and sales. First positions are likely to be those of draftsman, computer, plant operator, technical apprentice, inspector, or engineering assistant in connection with design, operation, or sale of equipment. With some experience, graduates are employed as foremen, assistant superintendents, assistant engineers, designing draftsmen, plant engineers, or inspectors, leading to better positions, such chief draftsmen, designers, testers, production managers, works' engineers, master mechanics, superintendents of motive power, power-plant engineers, research engineers, consulting engineers, production engineers, directors of public works, writers, or teachers.

SALARY

In a recent study of 1,019 mechanical engineers, annual salaries averaged $4,265; only 13 per cent received salaries

between $5,000 and $7,500; and 9% received greater amounts. Analyzed according to number of years since graduation from college, 14 men 1 year out of college averaged $1,892; 262 out of college 2 years averaged $4,581; 143 out 15 years averaged $5,606; 98 out 20 years averaged $6,306; 64 out 25 years averaged $7,976; and 44 out 30 years averaged $7,852.

PROSPECTS

The wide field of mechanical engineering offers unlimited opportunity for young men of energy, originality, and initiative; few women elect this work. As in any career, more depends on individual ability than on the winning of a diploma. Upon graduation, most engineering students are placed usually in salaried positions.

Students who plan to become mechanical engineers should be interested in improving machines or tools, and should handle mathematics and physics easily. They should obtain a technical education in one of the engineering schools, and should acquire a thorough acquaintance with the fundamentals of science and mathematics and the application of these to mechanics, thermodynamics, aero-dynamics, hydraulics, power machinery, machine tools, and management.

THE SCHOOLS

Of the 105 colleges and universities in the United States which offer work in mechanical engineering, 8 provide cooperative courses, whereby a student may spend part of his time in industry; 46 are land-grant institutions; 14 others

are under State or municipal control; and the remaining institutions are under private direction. There is no organization which accredits schools of mechanical engineering. The complete list of schools is appended with information as to name, address, enrollments and tuition rates.

Admission requirements are much alike for all engineering curricula, usually 15 units from an accredited high school - English, 3; algebra, 1½-2; plane geometry, 1; solid geometry, 1; history, science, or language 2-3; and options, 6-7. State institutions often admit any graduate from the accredited high schools within the State.

Curricula-Courses of study in mechanical engineering for the first two years are usually the same as for other engineering branches, specialization taking place in the junior and senior years. While there is no standardization of courses, most students are required to take mechanical engineering, shopwork, thermo-dynamics, kinematics and machine design, heat engines, mechanics of machinery, power engineering, automotive engineering, industrial management, contracts, and specifications. Also required are subjects which include mechanical drawing, drafting, descriptive geometry, engineering or applied mechanics, mechanics or strength of materials, hydraulics, surveying, civil engineering, and in some institutions options are offered in engine design, textiles, refrigeration, and ordnance.

Graduation requirements vary widely, but most institutions require from 140 to 150 semester-hour credits, including mathematics, 18 semester-hour credits; English, 10; physical science, 20; social science, 6; physical or military training. 6; nonengineering subject, 63; mechanical engineering subjects, 44; and other engineering subjects, 41; of which 5 are electives. These figures are merely generalizations to show current tendencies.

Degrees vary with institutions. Recommendations of the Society for the Promotion of Engineering Education in 1910 have been widely adopted: "(1) a 4-year engineering course should normally lead to the degree of B. S., - Bachelor of Science - to which should be added a specifying phrase, i.e., B. S. in Mechanical Engineering. (2) The professional engineering degree M.E. - Mechanical Engineer - should be given only to graduates who present satisfactory evidence of professional work of superior quality extending over not less than three years, and who submit a satisfactory thesis." Due to lack of standardization, these recommendations are not in effect in all institutions.

EXPENSES

The necessary expenses in schools of mechanical engineering average $700. Tuitions in 104 institutions average $217, ranging from $25 to $600 for the college year of nine months. Two rates are customary in the State-supported institutions - one for students who reside within the States, and a higher rate

for non-residents, or those whose legal residence is outside of the State in which the institution is located: in the 46 land-grant institutions the resident rate averages $98, while the non-resident rate averages $164. Other expenses may be estimated as follows: Board $1 per day, room 50 cents per day, laundry $1 per week, leaving $42 out of the $700 to apply to books and incidentals. To reduce these estimates a student will apply for scholarships, take cooperative courses, economize on living, and work im spare time. Loan funds are usually available for careful students. Not including clothing, amusements, or travel, the following is offered as a typical student budget:

Tuition	$217
Board	270
Room	135
Laundry	36
Books, etc	42
Total	$700

MECHANICAL-ENGINEERING SCHOOLS

Institution	Tuition and fees Resident	 Non-resident	Enrollments 1928
1	2	3	4
ALABAMA			
Alabama Polytechnic Inst.	$95	$145	118
University of Alabama	61	106	44
ARIZONA			
University of Arizona	20	170	45
ARKANSAS			
University of Arkansas	50	80	9
CALIFORNIA			
California Inst. of Tech.	261	261	14
Stanford University	344	344	39
University of California	50	200	866
University of Santa Clara	255	255	18
COLORADO			
Colorado Agri. College	82	107	17
University of Colorado	77	209	86
CONNECTICUT			
Connecticut Agri. College	30	180	61
Yale University	400	400	83
DELAWARE			
University of Delaware	118	268	31
DISTRICT OF COLUMBIA			
Catholic University of America	300	300	19
George Washington Univ.	250	250	73
FLORIDA			
University of Florida	40	140	25
GEORGIA			
Georgia School of Tech.	128	203	104
IDAHO			
University of Idaho	45	105	28
ILLINOIS			
Armour Inst. of Tech.	270	270	143
Lewis Institute	245	245	50
University of Illinois	60	135	274

MECHANICAL-ENGINEERING SCHOOLS, (cont.)

Institution	Tuition and fees		Enrollments 1928
	Resident	Non-resident	
1	2	3	4
INDIANA			
Evansville College	$183	$183	22
Purdue University	85	185	676
Rose Polytechnic Inst.	125	150	49
Univ. of Notre Dame	230	230	40
IOWA			
Iowa State Col. of Agriculture and Mechanic Arts	116	156	197
State University of Iowa	116	156	48
KANSAS			
Kansas State Agri.College	76	105	124
KENTUCKY			
University of Kentucky	60	85	106
University of Louisville	140	140	14
LOUISIANA			
Louisiana State University	39	39	34
Tulane University	165	170	112
MAINE			
University of Maine	181	281	88
MARYLAND			
University of Maryland	144	206	16
MASSACHUSETTS			
Harvard University	400	400	68
Mass.Inst. of Technology	500	500	275
Northeastern University	260	260	277
Tufts College	335	335	138
Worcester Polytechnic Inst.	280	280	134
MICHIGAN			
Michigan State Col. of Agri.	129	174	63
University of Detroit	225	225	134
University of Michigan	123	163	243
MINNESOTA			
University of Minnesota	110	140	232
MISSISSIPPI			
Mississippi Agri. and Mech.Col.	48	128	22

MECHANICAL-ENGINEERING SCHOOLS, (Cont.)

Institution	Tuition and fees		Enroll-ments, 1931
	Resident	Non-resi-dent	
1	2	3	4
MISSOURI			
University of Missouri	$ 60	$ 80	76
Washington University	271	271	67
MONTANA			
Montana State College	71	146	102
NEBRASKA			
University of Nebraska	83	108	104
NEVADA			
University of Nevada	23	173	31
NEW HAMPSHIRE			
Univ. of New Hampshire	150	250	67
NEW JERSEY			
Newark College of Engineering	180	350	40
Princeton University	480	480	---
Rutgers University	229	229	18
Stevens Inst. of Tech.	600	600	447
NEW MEXICO			
New Mexico College of Agri. and Mechanic Arts	50	80	20
NEW YORK			
Clarkson College of Tech.	238	238	53
Columbia University	340	340	53
Cornell University	320	320	447
Manhattan College	210	210	14
New York University	380	380	71
Polytechnic Inst. of Brooklyn	375	375	90
Rensselaer Polytechnic Inst.	355	355	249
Syracuse University	335	335	33
University of Rochester	330	330	45
NORTH CAROLINA			
No. Carolina State College of Agri. & Engineering	147	167	91
Univ. of North Carolina	141	166	13
NORTH DAKOTA			
North Dakota Agri.College	63	85	114
University of No.Dakota	55	75	9

MECHANICAL-ENGINEERING SCHOOLS, (cont.)

Institution	Tuition and fees		Enrollments 1928
	Resident	Non-resident	
1	2	3	4
OHIO			
Case School of Applied Science	$377	$377	114
Ohio Northern Univ.	163	163	50
Ohio State University	76	181	233
University of Akron	45	165	45
University of Cincinnati	168	227	250
University of Dayton	---	190	22
OKLAHOMA			
Oklahoma Agri.& Mech.Col.	26	56	76
University of Oklahoma	13	63	38
OREGON			
Oregon State Agri.College	66	171	97
PENNSYLVANIA			
Bucknell University	166	166	44
Carnegie Inst.of Tech.	330	330	85
Drexel Institute	265	265	151
Gettysburg College	315	315	13
Lafayette College	420	420	37
Lehigh University	441	441	67
Pennsylvania State Col.	134	284	214
University of Penn.	400	400	28
University of Pittsburgh	300	300	49
Villanova College	273	273	24
RHODE ISLAND			
Rhode Island State College	30	80	16
SOUTH CAROLINA			
Clemson Agri.College	80	20	19
SOUTH DAKOTA			
So.Dakota State Col. of Agri.&Mechanic Arts	65	90	5
University of So.Dakota	60	85	13
TENNESSEE			
Univ. of Tennessee	69	150	50
TEXAS			
Agri.& Mech.Col.of Texas	27	27	254
Rice Institute	25	25	53
Southern Methodist Univ.	239	239	39
University of Texas	30	30	107

MECHANICAL-ENGINEERING SCHOOLS, (Cont.)

Institution	Tuition and fees		Enrollments 1931
	Resident	Non-Resident	
1	2	3	4
VERMONT			
University of Vermont	$330	$330	40
VIRGINIA			
University of Virginia	180	260	23
Virginia Polytechnic Inst.	178	298	104
WASHINGTON			
State College of Wash.	20	150	71
University of Washington	76	181	70
WEST VIRGINIA			
West Virginia University	66	216	45
WISCONSIN			
Marquette University	216	216	37
University of Wisconsin	31	155	205
WYOMING			
University of Wyoming	50	65	21
104 Mechanical engineering schools, average tuition	181	217	
Enrollment			10,322

ELECTRICAL ENGINEERING [1]

The electrical engineer, with a superior knowledge of electricity and its uses, designs, manufactures, installs, and operates electrical machines and appliances, in the field of (1) manufacturing, (2) generation of power, (3) transmission, or (5) communication. While some of the work mentioned in this leaflet is done by men who are not engineers, the aim is to present the actual work that college graduates in the field are doing.

1. Manufacturing - The manufacture of dynamos, motors, appliances, apparatus, and electrically operated machinery has become one of the leading industries in the United States. New uses of electricity require new machines. Corporation pay rolls include college graduates who are designers. inventors, managers, foremen, and specialists to direct production work. Expert salesmen market the manufactured products. Electrical engineers install, test, and approve electrical machinery, the final stage in manufacture. Manufactures products used in power plants, factories, cities, and homes include electrical apparatus for street railways, street and indoor lighting, elevators, brakes. motor drives, mining joists, pumps, rolling mills, furnaces. electrolytic work, heating, cooking, domestic purposes, etc.

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[1] Electrical Engineering, Guidance Leaflet No. 12, U. S. Dept. of the Interior, Office of Education, U. S. Govt. Printing Office, Washington, D. C., 1932

2. Generation of power - The electrical engineer is jointly responsible with the civil engineer for the design of a hydroelectric plant, or with the mechanical engineer for a steam-electric plant, for the general layout, the number and size of the units, the auxiliary power supply the reserve capacity needed, the steam cycle adopted, etc. He is also individually responsible for the electric-but system chosen, the excitation system, the protective-relay system, the current-limiting reactor and circuit-breaker installations, the station metering, and all the specific electrical problem for design, installation, and operation.

3. Transmission - Distribution of power is handled by engineers who are responsible for the operation and maintenance of power plants and equipment, and who may select and assemble generators, transformers, meters, and other related equipment. Electric steam-power plants and hydro-electric plants, especially those at Niagara, are used to transmit electric current to remote places, often hundreds of miles distant. To meet the increasing demand for cheap electricity, power plants are being enlarged or new ones built to serve both manufacturing and domestic needs. More than two-thirds of the population of the United States now live in electrically wired homes, and every town of 5,000 population is served. In addition, many villages near distributing points are wired.

4. Transportation - Electric transportation has been developed in and near the congested centers of population.

Electrification of railroads in Pennsylvania, Illinois, and New York is nearing completion. Electric street railway systems have been familiar in the larger cities since 1885. Electric aubomobiles and trucks are extensively used in metropolitan districts. Ships with steam turbines and high-pressure boilers are equipped with electrical power.

5. Communication - Beginning with the telegraph in 1835, communication developed through the telephone in 1876 and the wireless telegraph in 1895 to the radio-telephone in 1876 and the wireless telegraph in 1895 to the radiotelephone in 1915, when engineers of the Bell System transmitted speech successfully nearly 5,000 miles from Arlington, Va., to Hawaii. New phases of communication are illustrated by ship-to-shore radio, picture transmission by wire, talking pictures, and television. Engineers are constantly improving the fidelity of receiving apparatus. Inventors and designers are in demand.

QUALIFICATIONS AND DUTIES

The electrical engineer should be a good mathematician, physicist, and research investigator; he should have the desire and ability to stick to a problem to successful completion. His duties in industry may vary from accounting, advertising, selling, teaching, and writing, to constructing, consulting, designing, estimating, inspecting, installing, metering, operating, purchasing, research, testing, and valuation.

EMPLOYMENT

Employment is obtained with industries which manufacture

and sell electrical apparatus and supplies or produce and distribute power - electrochemical plants, electrometallurgical industries, traction systems, illumination companies, wire and radio communication corporations, and research laboratories. Many manufacturing corporations start men in apprenticeship courses of one or two years in order to give students experience and practical training as well as to determine their aptitudes and talents.

Nearly half of first positions are obtained through the college agencies or solicitation of an employer; sometimes through work done prior to college graduation; often through personal initiative; and to some extent through family, alumni, and employment agencies. In a study of recent graduates, about 80 per cent of those in electrical engineering entered the same or closely allied field of engineering while the remaining 20 per cent were employed in other work.

SALARIES

Salaries of electrical engineers average a little more than $3,600 annually. This figure is based on a study of 1,726 electrical engineers in 1928. (land-grant-college survey.) Those out of college 2 years (565) averaged $1,189 annually, 518 out of college 5 years averaged $2,889, 185 out of college 10 years averaged $4,231, 156 out of college 15 years averaged $5,357, 131 out of college 20 years averaged $6,452, 96 out of college 25 years averaged $7,656, and 46 out of college 30 years averaged $8,141. Less than 6 per cent of the 1,726

electrical engineers studied earned $7,500 or more.

CENSUS

Electrical engineering is essentially a man's occupation, although a few women are already in the field engaged in drafting, designing, illuminating, radio engineering, teaching, and even manufacturing.

The impetus which electrical engineering has had since the World War will doubtless be revealed in the 1930 census figures, which are not available at this time. Although electrical engineering is one of the youngest of the engineering specialities, there are now more students enrolled in electrical-engineering courses in the colleges than in any other single branch of engineering. With so many graduates in this field from the colleges, the question arises, Is electrical engineering becoming an overcrowded occupation?

REGISTRATION

The American Engineering Council, 26 Jackson Place, NW., Washington, D. C. represents 24 national, state, and local engineering organizations which have a constituent membership of 58,000 professional engineers. Since its organization in 1920 it has endeavored to issue current information on engineer registration laws. Twenty-five States to date have registration laws for engineers and architects: Arizona, Arkansas, California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Mississippi, New Jersey,

New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, West Virginia, and Wyoming.

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION

The Society for the Promotion of Engineering Education, Pittsburgh, Pa., was organized at the World's Fair in 1893 "for the promotion of the highest ideals in the conduct of engineering education with respect to administration, curriculum, and teaching work, and the maintenance of a high professional standard among its members. The means to this end shall include educational research, the holding of meetings for the reading and the discussion of professional papers, and the publication of papers, discussions, and communications as may seem expedient." Membership in the society is of two general classes, institutional with 118 members, and individual including 2,172 persons. The Society for the Promotion of Engineering Education Bulletins on the Investigation of Engineering Education Bulletins on the Investigation of Engineering Education are of interest to students seeking authentic information on the objects of engineering education and the fitness of the present-day curriculum in colleges.

THE SCHOOLS

There are 119 four-year institutions which are offering training in electrical engineering. To date there is no organization which accredits or evaluates engineering schools.

Forty-five are land-grant colleges, 15 are independent polytechnic institutes, 36 are independent universities, and the complete list is appended, with information as to name, address, enrollments, and tuition rates.

ADMISSION REQUIREMENTS

Studies show that only 40 per cent of the entrants graduate, and nearly half of those who drop out do so because of scholastic failure. Entrance requirements of engineering schools in the United States are based upon the presentation of 15 units from an accredited high school. Of these units most schools require 3 in English, 1½ to 2 in algebra, 1 in plane geometry, one-half in solid geometry, 2 or 3 in history, science, or language, and 6 or 7 in options. Two-thirds of the schools have full control over entrance requirements, while the others are required to admit all graduates of accredited high schools in the State in which the institution is located.

COURSES OF STUDY

Freshman and sophomore courses in an institution are usually of a general engineering nature, while the junior and senior years become specialized according to whether the student elects electrical, civil, mechanical, or some other engineering specialty. Courses of study vary in content and in number with different institutions. There is no standard course; the number of semester-hour credits required for graduation ranges from 111 to 184 with a median of 145. Most schools offer few if any electives in the electrical engineering cur-

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Specific electrical engineering subjects include: Electrical instruments, electrical wiring, assembly and installation, principles of electrical engineering, alternating currents, direct currents, electrical-engineering testing, alternating-current machinery, advanced electrical machinery, alternating-current design, direct-current design, electric lighting, electric-power transmission, transformer and induction-motor design, telephone and telegraph engineering, radio engineering, dynamo laboratory, industrial applications of electricity, and electrical theory and measurements.

Evening courses leading to degrees are offered in only six institutions - 4 in New York City, 1 in Washington, and 1 in Pittsburgh. Twenty-one others offer evening work in engineering, 31 offer short course, 8 maintain extramural courses, and 16 offer instruction by correspondence.

COOPERATIVE ENGINEERING

Cooperative engineering, which originated in the college of engineering at the University of Cincinnati in 1905-6, is

now available in several institutions in the East and Middle West, indlucing Drexel, Louisville, Southern Methodist, North Carolina. Detroit, Massachusetts Institute of Technology, Evansville, Newark, Marquette, Akron, Pittsburgh and Northeastern. By a definite agreement between these colleges and certain industrial plants, and by a careful selection of students, instructors, and employers, the plan has been successfully worked out. Students work alternately in college and on a practical job near the college, and usually two students hold the same job alternately, thus giving the employer continuous service. Students are supervised and allowed certain college credit for their work; standard wages are paid, and they are enabled to observe factory organization, plant operations, labot conditions, and various processes in industry. Theory in college is thereby coordinated with practice in industry. New students, however, seldom begin with practical employment; in the second semester they are interviewed, and during the following summer or later are assigned to jobs in industry. The time required for completion of such courses is frequently longer than four years.

DEGREES

There is no uniformity in the granting of first degrees in the engineering colleges. More than half of the institutions confer the degree of bachelor of science in electrical engineering, or simply bachelor of science, while the remaining

schools confer degrees of bachelor of electrical engineering, bachelor of engineering, electrical engineer, or other nomemclatures.

In 1910 the Society for the Promotion of Engineering Education made the following recommendations which are widely accepted: (1) A 4-year engineering course should normally lead to the degree of bachelor of science, (B.S.), to which should be added a specifying phrase, for example, bachelor of science in electrical engineering. (2) The professional engineering degree - electrical engineer (E.E.) should be given only to graduates who present satisfactory evidence of professional work of superior quality extending over not less than three years, and who submit a satisfactory thesis.

EXPENSES

Expenses in electrical engineering schools average about $700 per year per student. This figure is a minimum one which does not include personal expenses for travel, clothing, fraternities, or other social costs which vary with individual needs and tastes. Tuition and fees, which average $208 per college year of nine months, range from a few dollars in the State universities to $500 in Massachusetts Institute of Technology. Drafting instruments purchased the first year cost about $25. A fair estimate for meals is $1 per day and for room 50 cents per day, while laundry bills amount to nearly $1 per week, unless laundry is sent home, via parcel post. Expenses

are materially reduced by economical living, self-help, scholarships, cooperative engineering courses, and summer employment.

Student's budget estimates for the first year of 36 weeks:

Tuition	$208
Board	270
Room	135
Laundry,	36
Books	26
Instruments	25
Minimum annual expense	$700

Is all this material of the same date? If so, not of much value

ELECTRICAL ENGINEERING SCHOOLS

Institution	Tuition and fees		Enrollments 1928
	Resident	Non-resident	
1	2	3	4
ALABAMA			
Alabama Poly. Institute	$95	$145	334
University of Alabama	61	106	94
ARIZONA			
University of Arizona	20	170	99
ARKANSAS			
University of Arkansas	50	80	42
CALIFORNIA			
California Inst. of Tech.	261	261	18
Stanford University	344	344	22
University of California	50	200	----
University of Santa Clara	255	255	53
COLORADO			
Colorado Agri. College	82	107	37
Colorado College	223	223	15
Colorado School of Mines	40	240	----
University of Colorado	77	209	183
University of Denver	241	241	158
CONNECTICUT			
Yale University	400	400	79
DELAWARE			
University of Delaware	118	268	62
DISTRICT OF COLUMBIA			
Catholic University of Am.	300	300	42
George Washington Univ.	250	250	110
Howard University	136	136	15
FLORIDA			
University of Florida	40	140	63
GEORGIA			
Georgia School of Tech.	128	203	202
University of Georgia	100	200	10
IDAHO			
University of Idaho	45	105	100

ELECTRICAL ENGINEERING SCHOOLS, (Cont.)

Institution	Tuition and fees		Enrollments, 1928
	Resident	Non-resident	
1	2	3	4
ILLINOIS			
Armour Inst. of Tech.	$270	$270	206
Lewis Institute	245	245	110
University of Illinois	60	135	448
INDIANA			
Evansville College	183	183	25
Purdue University	85	185	765
Rose Polytechnic Inst.	125	150	115
University of Notrê Dame	230	230	81
IOWA			
Iowa State Col. of Agri.	116	156	434
State University of Iowa	116	156	103
KANSAS			
Kansas State Agri. Col.	76	105	407
University of Kansas	56	81	----
KENTUCKY			
University of Kentucky	60	39	100
Tulane University	165	170	112
LOUISIANA			
Louisiana State Univ.	39	39	100
Tulane University	165	170	112
MAINE			
University of Maine	181	281	168
MARYLAND			
John Hopkins Univ.	423	423	----
University of Maryland	144	206	28
MASSACHUSETTS			
Harvard University	400	400	106
Mass. Inst. of Tech.	500	500	445
Northeastern University	260	335	521
Tufts College	335	335	138
Worcester Poly. Inst.	280	280	174
MICHIGAN			
Michigan State Col. of Agri.	129	174	94
University of Detroit	225	225	199
University of Michigan	123	163	240

ELECTRICAL ENGINEERING SCHOOLS, (Cont.)

Institution	Tuition and fees Resident	 Non-resident	Enrollments 1928
1	2	3	4
MINNESOTA			
University of Minnesota	$110	$140	430
MISSISSIPPI			
Mississippi Agri.and Mech. College	48	128	88
University of Mississippi	41	91	75
MISSOURI			
University of Missouri	60	80	191
Washington University	271	271	144
MONTANA			
Montana State College	71	146	172
NEBRASKA			
University of Nebraska	83	108	265
NEVADA			
University of Nevada	23	173	81
NEW HAMPSHIRE			
University of New Hampshire	150	250	124
NEW JERSEY			
Newark College of Engineer.	180	350	82
Princeton University	480	480	----
Rutgers University	229	229	29
NEW MEXICO			
New Mexico College of Agri. and Mechanic Arts	50	80	24
University of New Mexico	47	87	9
NEW YORK			
Clarkson College of Tech.	238	238	78
Columbia University	340	340	44
Cornell University	320	320	335
New York University	380	380	107
Polytechnic Inst. of Brooklyn	375	375	335
Rensselaer Poly,Inc.	355	355	503
Syracuse University	335	335	58
Union College	365	365	103

ELECTRICAL ENGINEERING SCHOOLS, (cont.)

Institution	Tuition and fees		Enrollments 1928
	Resident	Non-resident	
1	2	3	4
NORTH CAROLINA			
North Carolina State Col. of Agri. and Engineering	$147	$167	224
University of No. Carolina	141	166	84
NORTH DAKOTA			
No. Dakota Agri. College	63	85	9
No. Dakota State School of Science	42	42	63
University of No. Dakota	55	75	29
OHIO			
Case School of Applied Science	377	377	69
Ohio Northern University	163	163	67
Ohio State University	76	181	361
Ohio University	90	90	55
University of Akron	45	165	80
University of Cincinnati	168	227	401
University of Dayton	---	190	52
OKLAHOMA			
Oklahoma Agri. & Mec. Col.	26	56	231
University of Oklahoma	13	63	121
OREGON			
Oregon State Agri. College	66	171	165
PENNSYLVANIA			
Bucknell University	166	166	56
Carneigie Inst. of Tech.	330	330	146
Drexel Institute	265	265	282
Gettysburg College	315	315	20
Lafayette College	420	420	37
Lehigh University	441	441	142
Pennsylvania State Col.	134	284	398
Swarthmore College	300	300	---
Villanova College	273	273	44
University of Pennsylvania	425	425	51
University of Pittsburgh	300	300	80
RHODE ISLAND			
Rhode Island State College	30	80	69

ELECTRICAL ENGINEERING SCHOOLS, (Cont.)

Institution	Tuition and fees		Enrollments 1928
	Resident	Non-resident	
1	2	3	4
SOUTH CAROLINA			
Clemson Agri.College	$ 80	$120	39
University of So.Carolina	77	117	---
SOUTH DAKOTA			
So.Dakota State Col. of Agri.and Mechanic Arts	65	90	37
State School of Mines	60	85	110
University of South Dakota	60	85	43
TENNESSEE			
University of Tennessee	69	150	182
TEXAS			
Agri. & Mech.College of Texas	27	27	431
Southern Methodist Univ.	239	239	75
Rice Institute	25	25	99
University of Texas	30	30	216
UTAH			
University of Utah	98	123	43
VERMONT			
Norwich University	283	353	66
University of Vermont	330	330	54
VIRGINIA			
Virginia Military Inst.	35	235	49
Virginia Poly.Inst.	178	198	312
University of Virginia	180	260	61
WASHINGTON			
State College of Wash.	20	150	157
University of Washington	76	181	225
WEST VIRGINIA UNIV.			
West Virginia University	66	216	158
WISCONSIN			
Marquette University	216	216	94
University of Wisconsin	31	155	355
WYOMING			
University of Wyoming	50	65	64

RECENT TRENDS TOWAED CREATING ART POSITIONS IN INDUSTRY TODAY

Within the past few years there has been developing a growing consciousness on the part of manufacturers that beauty in common objects means increased money returns. Concerns like General Motors, for example, are employing art trained men in addition to their general scientific designers. In the case of this large concern, the report is that among men of art is a color expert. The Westinghouse Electric plant last year added an art director to its staff. The Pittsburg Plate Glass Company also has an art director on its payroll. Smaller firms often employ men of considerable art training who act as art critics of the products being manufactured and who sometimes fill in their time with certain other duties.

In the printing and publishing industry there are not many positions available for both men and women with art training, but there are art positions in this field which require neither drawing nor designing. The advertising departments of our newspapers and magazines probably take the largest numbers of such employees.

A new and growing field for art trained men and women is that of merchandising. The styling and selling of

goods and commodities by experts in the field is now a common practice among retail stores and the larger distributing wholesale houses.[1]

THE RESPONSIBILITY OF THE SCHOOL

In teaching the subjects within the fields of art and mechanical drawing the instructor must bear clearly in mind the fact that these subjects are not for the artist alone but for everyone; that they have both cultural and practical values. Art and mechanical draftsmanship as subjects in the school curriculum, relate in a vital way to industry, to home life, and to community life. In their modern interpretation art and mechanical drawing contribute directly to the civic, domestic, and social activities and needs of the people.

The true purpose of the teaching of art and mechanical drawing is the education of all for appreciation, the development of a critical judgment and as many skills as may be found feasible, considering the environment, natural abilities and needs of the individual.

It is the responsibility of the school to make the school world art-conscious. Hence all pupils in the early secondary years should have the opportunity to get both an art and a draftsman's education.

The work in art education in all grades should open the

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[1] Art Education in Principle and Practice, Klar, Winslow and Kirby, Pages 23 and 24.

eyes and the minds of the pupils and endow them with a love and an understanding of beauty in nature and in worthy works of man. It would enable them to enjoy life more completely, and react to the beauties therein, through ability to see and appreciate beauty and to use beauty in their environment. In other words, the purpose of any course of study in art should be to supply substance for better and happier citizenship.[1]

Therefore those who teach the subject, find in art not only the cultural value, but great practical qualities which make it of infinite service to man. Socially and morally it is valuable because its refining influence improves the conduct of those who are brought in contact with it making for the best quality of citizenship; politically it is helpful because the artistic nation is a nation with high ideals; industrially it is of great importance because art enters into countless varieties of production and gives vitality to innumerable branches of industry. The best place to inculcate the love of the beautiful is in the school room. To the rising generation the most effective lessons can be given and from the school thousands of children will carry the lessons to thousands of homes.2

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[1] The Class Room Teacher, Vol. II, Pages 6 and 7.

[2] Fine Arts Course of Study, High School Curriculum Bulletin No. 212, San Francisco Public Schools, City of San Francisco, California, Page 15.

With this thought in mind the course of the eighth grade is planned so that the development of some skills will parallel the work of appreciation.

After a year of this type of art education the pupils may be divided into three classes. Those with decided talent who should be encouraged to take advanced courses in the ninth and Senior high school grades as a foundation of future work; and those who are without special art abilities but who would find the general courses in art appreciation most valuable in helping them to appreciate the beautiful and useful things in life.

Those pupils who show art ability during the eight grade year of the Junior high school should in ninth year elect the course of study which is prerequisite for advanced courses in art, mechanical drawing and architectural drawing. These pupils should form the nucleus of the art, academic group in senior high school.

It is not to be expected that every teacher can teach all of the skills to any one class, but it is hoped that there are sufficient suggestions from which to make wise selection according to the interests and abilities of the individual classes.

There should be no monotony in the art course, although the fundamental principles should be kept well in mind whatever their application on the part of both teacher and pupils.

The teacher in art appreciation subjects as well as the teacher of art technic needs to have full art and educational

training and a strong background of experience; otherwise the judgments formed will be faulty and pupils will have their sense of evaluation distorted. As the fundamental principles of art are as vital in appreciation as in performance, the master teacher is essential.[1]

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[1] Syllabus in Art Education for the Junior High Years, The University of the State of New York; Albany, N. Y., The State University Press, Pages 7 and 8.

ADMINISTRATIVE SUGGESTIONS[1]

1. TIME: (Assuming the period is not less than 45 or 50 minutes throughout the year).

2. Place in the curriculum a required course in the eighth year, but the time given to the subject and also the character of the instruction should depend upon the interests, the abilities and the needs or life objectives of the individual pupils.

3. For those pupils who will probably not continue art work in the senior high school years a course in the household art is provided. The pupils, however, may elect art courses if their interests are aroused.

4. Suggestions for teachers - The teacher of art in the junior and senior high school should have the following qualifications:

(a) Art training equal to the requirements for teaching art in the senior high school.

(b) Special interest in and understanding of the special problems of early adolescent age.

(c) Familiarity with the new trends in education in the junior high school.

(d) Ability to make art into a subject that integrates with other intra-curricular activities in the junior high school program.

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[1] Syllabus in Art Education for the Junior High School Years; The University of the State of N. Y., Albany, N. Y., The State University Press, Pages 10, 11 and 67.

(e) Ability to guide vocationally specially gifted pupils along the line of special talent.

The teachers attitude should be that of a guide with ability to lead when necessary in any of the fields of drawing, research or craft. Teachers should show willingness to co-operate with extra-curricular and entra-curricular activities in other school departments, as dramatics, costume planning, scenery making, and in craft problems such as bookmaking, basketry, pottery, etc.

5. Steps in the success of any project -

(a) Adequate preparation by the teacher.
(b) Appropriate illustrative material.
(c) Analyses of the project by the teacher and pupils, followed by a definite statement by the teacher.
(d) Systematic development of the steps of the problem, as project, aim, preparation, presentation, point of contact, development of lesson, class criticism.

6. Lesson presentation -

(a) Each drawing period should be opened by a brief presentation of the points to be borne in mind during the lesson.
(b) Pupils should be set to work promptly. Subsequent steps in the lesson should be developed in a manner similar to the brief introduction, by presentation, recitation, and illustration.
(c) Pupils should be called upon to explain and illustrate principles. Considerable use should be made of the blackboard.

7. Illustration -

(a) Every lesson should be abundantly illustrated by the teacher who should aim to set a standard for the pupils in the finish of the drawings made. Wherever possible the use of color is recommended in connection with this work.

(b) Illustrative material in the form of charts (both of drawn and mounted sheets) for design and representation should be shown. These exhibitions should be frequently changed and work from other classes should be displayed when available.

(c) Illustration by the teacher should be made to supplement the graphic answers of the public.

8. Questioning -

(a) Each phase of a lesson should be developed through active class participation. The teacher should guide and at times motivate the procedures.
(b) Questions requiring oral answers should be varied by questions requiring "motor" answers; that is, answers where the pupils illustrate their comprehension of the point by a required action, as pencil measurement, proportion, taking, etc.
(c) Questions should be framed by the teacher to require careful thinking on the part of pupils before the answer is called for from some individual. Teachers should guard against confining their questions to a few individuals. Pupil committee participation is highly desirable.

9. Class criticism -

(a) Wherever a typical error of understanding or technic is observed, a brief class criticism should immediately follow. This should aim to discover the rror and the method of its correction.

(b) The time for classroom criticism is during the development of a problem. To be of value, correction of errors discovered must be possible.
(c) Individuals making typical errors should be called upon in class to state and apply governing principles to their work. Continuous effort should thus be made to waken in each pupil the power of self-criticism.

II

SPECIFIC OBJECTIVES IN TEACHING ART IN JUNIOR HIGH SCHOOL AND SENIOR HIGH SCHOOL

Inasmuch as design is the basis of all construction and all art appreciation it is made first in importance whether the exercise be representative, decorative, or structural.

With that chief consideration in mind, some of the immediate ends to be sought are:

Appreciation and good taste to be developed by the work of the regular art courses - fundamental drawing, related art design, and crafts of various kinds.

Standards to be set up which will act as guides in choices involving form, harmony of tone and color in surroundings and in things for daily use.

Every effort to be made to develop problems of design adaptable to the needs of those departments of the school where manual work is taught; in fact they should be largely the actual current problems of the departments.

Discovery and encouragement of the student of special ability.

Equipment of the individual with positive means for the enjoyment of leisure.[1]

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[1] Fine Arts Course of Study; High School Curriculum Bulletin No. 212; San Francisco Public Schools, City and County of San Francisco, California, 1928, Page 15.

JUNIOR HIGH SCHOOL ART[1]

As the pupil advances to the junior high school he is confronted by a differentiated curriculum, with art as a differentiated subject, although he should be made to realize that art is a subject related in high school experience to other subjects; related to his history, to geography, to science and to the languages. An understanding of art opens up the new avenues of profitable activity and it thus affords recreation for those who know how to make use of it.

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[1] Art Education in Principle and Practice, Klar, Winslow and Kirby; Page 113.

GENERAL OBJECTIVES IN ART FOR THE

JUNIOR HIGH SCHOOL AND SENIOR HIGH SCHOOL

1. To build upon the skills and knowledge obtained during the preceding year.

2. To be governed by the fact that for many pupils that the eighth grade year is the last year of training in these field.

3. To discover and select those pupils who show a special aptitude for the subject and to give them additional opportunity for exploration.

4. To raise the standards of attainment in creative thinking, technical skill and knowledge, so that pupils feel the possibility of achievement and the desire for further experience. Throughout the eighth year there should be constantly increasing attention to the exploratory function of the work in order that later choices of work in this field may be made intelligently and with every attention to the interests and needs of each pupil.

5. To stimulate an appreciation through training in graphic, plastic and constructed forms, so that there will be sufficient ability to use these as a medium of expression, enjoyment, and participation in Art wherever found in any activity.

6. To contribute to the cardinal principles of education.

(a) Art contributes to fundamental processes through its handwork, lettering, illustrating, and measuring required.

(b) Art contributes to worthy home membership by teaching each pupil appreciation in color, design and arrangement.

(c) Art contributes to worthy use of leisure time by the study of pictures, good magazine illustrations, and by estimating the beauty of all his surroundings.

(d) Art contributes to civic education by developing a love for the beautiful wherever the child comes in contact with it, and by encouraging self-expression in every possible way.

(e) Art contributes to ethical character by giving the pupil a fuller understanding of art in its own relation to his own life.

7. To develop good habits of accuracy, neatness, right attitude in cooperation and responsibility, unselfishness are objectives common to all subjects of education. But Art activities in education afford fields of experience especially rich in opportunity for development and measurement of these qualities.

To increase his social consciousness through -

(a) Acquaintance with the art of other peoples and other times.

(b) Participation with others in art work.

III

SPECIFIC OBJECTIVES IN TEACHING MECHANICAL DRAWING IN THE JUNIOR AND SENIOR HIGH SCHOOL

One of the first responsibilities in teaching is that of having clearly in mind the goals or objectives towards which the efforts of the students should be constantly directed. In designing a course of study in mechanical drawing related to machine shop work, the aims of education must be analyzed from the ultimate goal into course aims and finally into the aims for weekly, or daily units of instruction.

Different courses of mechanical drawing have been designed for different purposes, but it would seem that better unity of method might result if there were a better recognition of the conception taught in the same way as any other language.

1. To study the mechanical draftsman's language so that it may be written, expressed clearly to one familiar with it; and may be read readily when written by another.

2. To become familiar with the technique of expression and to use mechanical drawing instruments correctly.

3. To develop accuracy of measurements and manual dexterity .

4. To make working drawings.

5. To know the names of machine parts.

6. To prepare for entrance to an engineering or technical college.

The ultimate purpose of a maehanical drawing course is to contribute its portion to the all round development of the student. It is not the aim to train for draftsmanship as a vocation, but to teach the fundamentals of draftsmanship so that the student can successfully read, write and interpret the shop drawings he will come in contact with as a machinist; to enable him to make neat and accurate shop sketches; to correlate and to give practical application to the shop and other related courses.

Since this course is designed directly to meet the needs of the student who has made a definite occupational choice, the aim is to lead directly to the goal with as much emphasis upon fundamentals as it is possible to secure. A thorough foundation must be laid before any attempt is made to specialize in any particular branch of the subject. Therefore, the first two years are devoted entirely to the fundamental processes of drawing, using practical machine shop problems to illustrate these principles.[1]

Technically, its purpose is to aquaint the student with the wide field of mechanical drawing, to enable him to read and interpret blueprints, to make drawings of all those objects which he is apt to make either in the machine or wood shop, to construct orthographic, isometric and oblique views, and to work out problems in surface development. Much emphasis is

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[1] The Course of Study in Related Drafting by Otto V. Guenther, from the School Magazine, Seneca Vocational High School, Buffalo, N. Y. , Pages 8, 9, and 10.

placed on correct drawing technique, and neat, correct lettering.

The proper sequence is essential for successful instruction in mechanical drawing. The problems have selected and arranged with this objective in view. They form a graded series

In order to arouse and maintain the student's interest in the work, all abstract and impractical problems have been eliminated.[1]

The vocational value of mechanical drawing must be kept in mind. All students may require skill in, and a thorough understanding of the principles of mechanical drawing which will be of commercial value should they desire to turn this knowledge to account either as draftsmen, architects or engineers.

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[1] Mechanical Drawing, Summary Outlines, Senior High School, Flint, Michigan, 1932.

IV

TENTATIVE COURSES OF STUDY IN ART AND MECHANICAL DRAWING AND THE ORGANIZATION OF THE ARTS AND CRAFTS CLUB IN THE JUNIOR HIGH SCHOOL

TENTATIVE ART AND MECHANICAL DRAWING PROGRAMS FOR THE EIGHTH AND NINTH GRADES

No. ____ Name ______________________
Room ____ Course ______________ Grade ____

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	Art 9-1 Room	Study Hall 1st week Art Club 2nd week Room Mech. Draw. CP-1	Mech. Drawing Room CP-1	8 SH Room	Art 9-1 Room
2	8 LH Room	Art 9-3 Room	Room	Art 9-3 Room	8 SB Room
3	8 BPL Room	Art 9-4 Room	8 LM Room	Art 9-4 Room	8 BPW Room
4	Mech. Drawing Room CP-2	Mech. Drawing Room CTH	Mech. Drawing Room CP-2	Mech. Drawing Room CTH	Room
5	Mech. Drawing Room CTW	Mech. Drawing Room CTB	Room	Mech. Drawing Room CTB	Mech. Drawing Room CTW
6	Art 9-2 Room	8 LR Room	Room	8 BPM Room	Art 9-2 Room

Art and Mechanical Drawing Program for Grades VIII and IX during 1937-8

No. ____ Name ______________________
Room ____ Course ______________ Grade ____

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	8 LH Room	8 BPM Room	8 LR Room	8 BPM Room	8 LH Room
2	8 LM Room	8 BPL Room	8 LR Room	8 BPL Room	8 LM Room
3	8 SG Room	8 SH Room	Room	8 SH Room	8 SG Room
4	Study Hall for Art Make-up Room work	8 BPW Room	Room	8 BPW Room	Study Hall for Art Make-up Room work
5	Room	8 BPA Room	8 SB Room	8 BPA Room	Room
6	8 LA Room	Study Hall for Art Make-up Room work	8 SB Room	Study Hall for Art Make-up Room work	8 LA Room

Tentative Art Program for the Eighth Grade

No. ____ Name ______________________
Room ____ Course ______________ Grade ____

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	Art 9-1 Room	Art 9-2 Room	Art 9-3 Room	Art 9-2 Room	Art 9-1 Room
2	Mech. Drawing Room CTH	Mech. Drawing Room CTB	Art 9-3 Room	Mech. Drawing Room CTB	Mech. Drawing Room CTH
3	Mech. Drawing Room CTW	Art 9-5 Room	Room	Art 9-5 Room	Mech. Drawing Room CTW
4	Study Hall for Art Make-up Room work	Mech. Drawing Room CP-2	Room	Mech. Drawing Room CP-2	Study Hall for Art Make-up Room work
5	Arts and Crafts Room Club	Room	Mech. Drawing Room CP-1	Room	Arts and Crafts Room Club
6	Art 9-4 Room	Study Hall for Art Make-up Room work	Mech. Drawing Room CP-1	Study Hall for Art Make-up Room work	Art 9-4 Room

Tentative Art and Mechanical Drawing Program for the Ninth Grade

GRADE VIII

ART

A required course in art should be given in the eighth year, but the character of the instruction for each problem given should depend upon the interests, the activities and the needs or life objectives of the individual pupils.

Because of the general scope of the subject matter of this grade, the plan of problems is given in monthly order.

SEPTEMBER AND OCTOBER

PROBLEM - Design and letter the "Annual School Report Cover" contest.

METHOD - The class should choose examples of well spaced lettering, the printed page, book covers, cards, folders, and advertisements.

Discuss ways of spacing words and sentences.

Demonstrate how letters may be made to fit any space by changing their proportions.

Show examples of well planned cover designs and lettering.

Call the attention to the styles of lettering and with the separate styles of design.

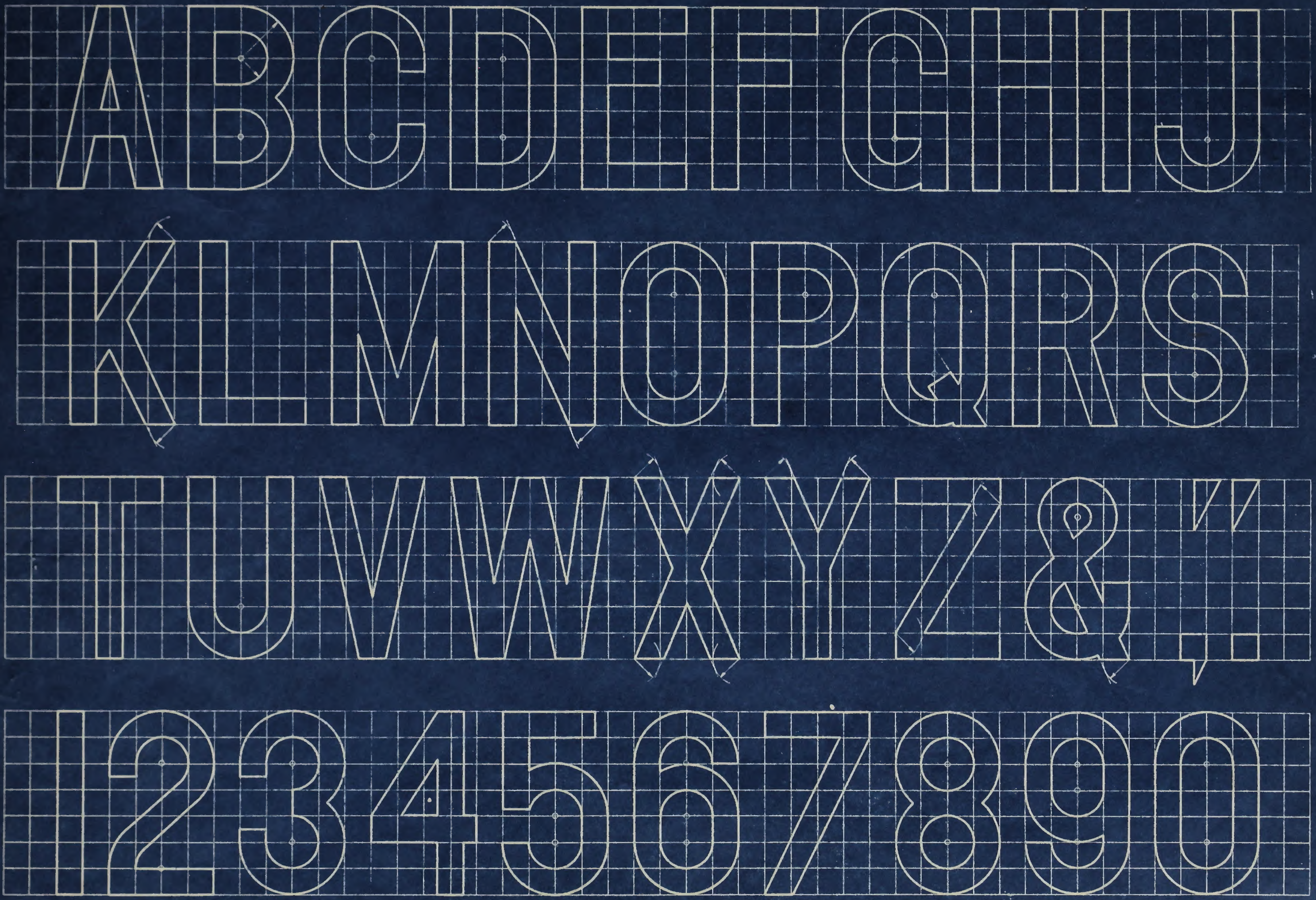
Stress the fact that following structural line assists in attaining good design.

Illustrate good cover design composition on the board.

Designed by W. Ben Hunt, Hales Corners, Wis.

TRACING SUPPLEMENT No. 258, JANUARY, 1933
INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

To be Reproduced for School Shop Use Only
Copyright, 1933, The Bruce Publishing Company


ABCDEFGHIJ
KLMNOPQRS
TUVWXYZ&',
1234567890

Block Letter Alphabet, Designed by Peter Dillman, Milwaukee, Wis.

Pupils bring to class examples of the most modern lettering to be found in papers and magazines.

Each pupil will plan at least four small cover designs and choose the best design to be drawn 8" x 12" in size on white drawing paper.

Teach the pupils to visualize and express idea.

Teach them how to compose a business-like cover design, with a knowledge of commercial design, composition and pencil technique.

Remind the class that the best Annual School Report cover designed in the eighth grade classes will be chosen.

Teach pen and ink technique to the individual student who wins this contest.

OCTOBER AND NOVEMBER

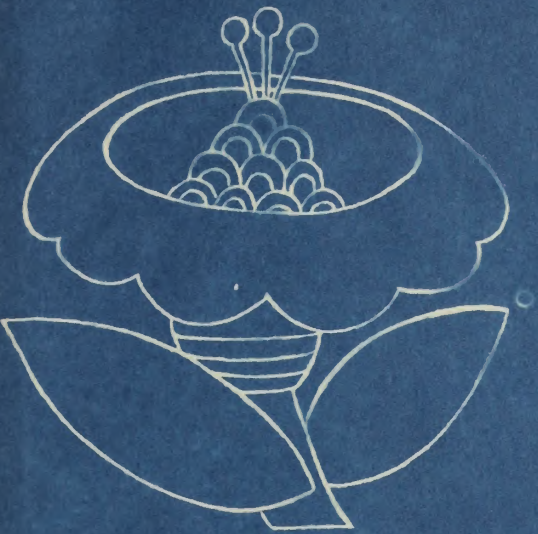
PROBLEM No. 1 - Color Study.

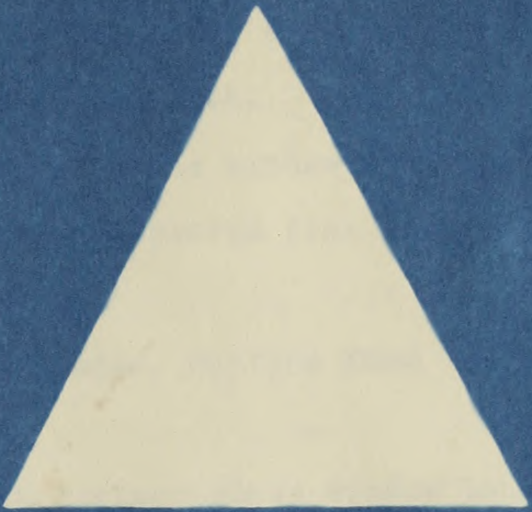
METHOD - Experiments in using water color. Discussion and experimentation with the following -

1. Source of color from the scientific point of view.
2. Qualities of color, hue value and chroma.
3. Combinations of color. Harmonies-self toned, analagous, complementary, spilt complementary, and dominant.

Color charts to show the results of the above experiments. These charts will also introduce the student to simple lettering and design.

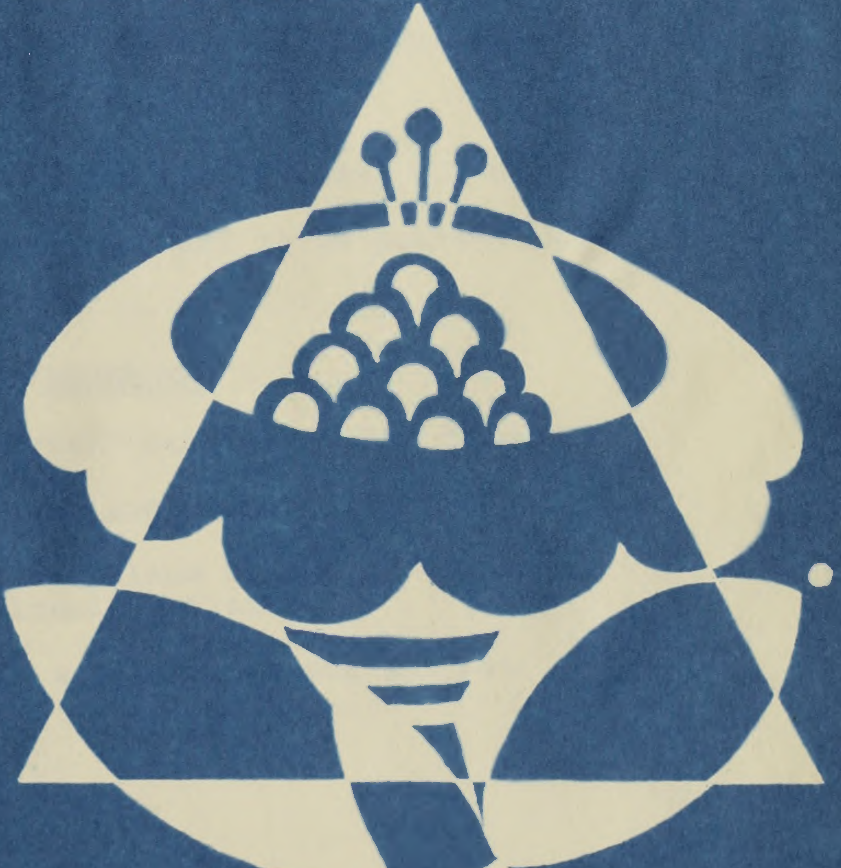
COUNTERCHANGE DESIGN





Any two geometric shapes may be used to produce this effect. In this case the flower unit is round and the imposed mass is triangular.

Sometimes a delicate flower may be imposed on a large, heavy one with a similar counterchange.



PROBLEM No. 2 - Stained glass window or Christmas card design.

METHOD: Stained glass window design - Fold piece of 9" x 12" black drawing paper in half, holding the paper with the height placed vertically on the desk.

Cut shape of a stained glass window starting from the fold and cutting downward on a convex line toward the edges of the paper.

Cut out silhouette design, cutting from the other sections.

Place cut out black stained glass window leading on a lighter piece of bright colored paper. Paste Christmas Card design.

Cut out silhouette design from two or three different colored papers or design a Christmas Card to be painted with water colors.

NOVEMBER AND DECEMBER

PROBLEM No. 1 - The "Briscoe Brief" magazine cover design, a problem given to both the eight and ninth grades.

METHOD - Study of structure of linoleum blocks.
Study of designs of linoleum blocks.

Construction of a design suitable for the subject matter of this issue -

1. A double paged cover design.
2. A frontice piece.
3. A departmental heading cut.
4. A small block picture.

Study of illustrations, photographs, and designs which will give the student an insight into the given illustrative problem.

STUDY OF ILLUSTRATIVE COMPOSITION -

Carving of linoleum block picture or design if design or picture is selected.

PROBLEM No. 2 - Stained glass window design or Christmas Card design.

JANUARY

PROBLEM - Sketching from life time and action sketches ranging from 1 to 40 minutes.

METHOD - Each child poses in turn for short sketches. The great value of quick action sketches lies in the elimination of unimportant detail, creating the model as a whole and with life.

Choose a simple incident which features one figure in swift or slow movement.

Dramatize the incident in several different ways.

Teach methods of attaining correct proportion and action-line direction.

FEBRUARY

PROBLEM - Plant design.

METHOD - 1. Design a silhouette of a plant, emphasizing form. This will bring out spacing as to lead to composition. Medium free brush and India ink.

2. Color sketch of plant. Medium water color wash. Much freshness will be achieved if the pencil is entirely avoided.

3. Decorative drawing of plant form in Occult Balance.

Medium - pencil, watercolors or ink.

4. Detailed drawing of plant, emphasizing quality of line and foreshortening.

MARCH

PROBLEM - The study of freehand perspective to develop the ability to draw objects of three dimensions, placed at an angle to the observer.

METHODS- Show the class a large rectangle form such as a box.

Place rectangular solid either a large frame of cardboard, supported by a stand or fold, or thumbtacked to block.

Determine pitch lines of the block as well as the variance of height from the foreground to the farthest point of the block from the eye.

Place several blocks together to create an architectural effect for more complicated angular perspective.

Show architectural pictures both historic and modern which illustrate angular perspective.

APRIL

PROBLEM - Design.

METHODS - 1. Review of general principles: Alternation, Axial, Central and Occult Balance, Progression, Circle, Square, Triangle, Oblong, Oval.

2. Conventionalization of design units from detail plant drawing.

(a) Repeating unit for surface pattern or border.
(b) Decorative spot.
(c) Design which has a definite process, materials and tools were considered.

(1) A design for stencil or block. Application of values and of color harmonies to design units, border and surface pattern.

MAY

PROBLEM - Costume design.

METHODS - Give a brief study of the history of dress.

Show the application of historic costume design in the costumes of the present day.

Design a modern costume showing the application of historic dress design in the lines of the costume.

Design a historic or peasant costume for the School operetta.

JUNE

PROBLEM - The study of illustrative drawing to teach the pupils the art of composition.

METHODS - Collection of pictures correlating with the geography, history or english class work of the year.

Selection of them to be illustrated is followed by collection of or reference to knowledge of the given subject.

Explain and illustrate on the board the methods of planning pictorial compositions.

Allow class to make four small plan sketches.

The best compositions will be drawn on 9" x 12" white drawing paper.

SUPPLEMENTARY MATERIAL
FOR
VIII GRADE ART CLASSES
OCTOBER AND NOVEMBER
COLOR[1]

Everything that surrounds us has color. Every person with normal vision feels its influence. Color is one of the strongest forces in determining the attractiveness or ugliness of an object. An understanding of color and its use is essential in the creation and appreciation of beauty.

In developing in children an understanding of color and its use, our first concern is to lead children to see and enjoy color; - to develop a new interest and an alertness to color; - to use color freely and delight in its use.

This may be accomplished through association with pleasing color harmonies and by experimenting with color. We are next concerned with adding to the child's common enjoyment and untrained experience, a practical understanding of the right use of color as applied to everyday experiences.

The following statement gives in simplified form the principles which govern the wise use of color;

Color has three qualities or dimensions. In describing a color it is not enough to say: "It is blue." One may think of turquoise blue, another may think of navy blue. In

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[1] Curriculum Bulletin No. 6, Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929, Pages 97,8 and 9.

speaking of color, three dimensions - hue, value, and chroma, must be given for accurate description.

Hue is the quality which distinguishes one color from another - the name of the color, as red or green.

Value is the quality of lightness or darkness, as dark blue or light green.

Chroma, or intensity, is the quality of brightness or dullness of a color, as bright green or dark blue, and so on.

Color seems to possess temperature, force, and weight. It is spoken of as warm or cold color, receding or advancing color, and active or passive color.

Warm colors are those having a predominance of red and yellow. They are yellow, orange, red, red purple, and yellow green.

Cold colors are those having a predominance of blue. They are blue, blue-green, green, blue-purple, and purple.

Active and advancing colors are the brightest possible chromes of all the colors. Red, orange, and yellow are more advancing because they are capable of greater intensity.

Passive and receding colors are neutralized grayed tones of all colors, especially green, blue, purple, blue-green, and blue-purple, colors which are quickly neutralized.

The six principles colors are red, orange, yellow, green, blue, and purple. The intermediate colors, or half-way steps between the principal colors are yellow-green, blue-green, blue-purple, red-purple, red-orange and orange-yellow.

There are four general types of color harmony in constant use. These are:-

1. Self-tone, in which there are light and dark, bright and dull variations of the same hue.

2. Accented neutral harmony having the main part of the color black, white or gray accentuated by some hue as a gray or black gown with a blue collar.

3. Analagous color harmony in which two or more colors have one hue in common, as blue-purple, and red-purple.

4. Complementary harmony wherein the colors are in strong contrast to one another; when placed side by side, they intensify each other, more than any other colors. They are:

Red and Green
Orange and Blue
Yellow and Purple
Red-orange and Blue-green
Orange-Yellow and Blue-Violet
Yellow-Green and Red-Violet

Generally speaking this type of color harmony is more pleasing when one or another of the colors are grayed. Otherwise it is harsh.

GRADE IX

ART

Prerequisite - Grade VIII Art

FIRST QUARTER

PROBLEM No. 1 - Color scales, - the six color scale of red, orange, yellow, green, blue and violet.

METHOD - The chart classifications should be as follows -

(1) According to their hue; spectrum relations; (2) According to their value; degree of light or dark; (3) According to their intensity; degree of brilliancy or saturation. The color terms as used may be understood to include neutrals.

Psychology of color - Bright colors are exhilirating; graved tones, quieting; Strong contrasts of hue or value are exciting; slight contrasts are restful. Warm colors, yellow, orange, and red, are advancing and stimulating; cool colors, blue, green, and violet, are retreating and quieting. A proper organization of hue, value, and intensity is essential to beauty. A knowledge of the power of color is a distinct asset.

Application - Beautiful colors and color combinations in the animal, vegetable, and mineral kingdoms in costume, in home furnishings and decorations, in landscape gardening, in such commercial commodities as dyes and paints, in posters and in advertising art in general should be brought to the atten-

tion of the students.

Letter the Complementary, Split Complementary Analagous and Triadic color harmonies on the original six color scale. (Gothic letters)

PROBLEM No. 2 - Apply one of the color harmonies to an Occult Balance design.

SECOND QUARTER

PROBLEM No. 1 - Charcoal caste drawing of bas relief designs and heads.

PROBLEM No. 2 - Christmas card designs.

PROBLEM No. 3 - Briscoe Briefs cover design, frontice piece, and departmental heading designs for Christmas.

METHOD - Familiarize the class with commercial advertising and illustration by showing fine examples of book covers and full page advertisements.

Compare good and inferior examples.

Review the principles of design and illustrate their observance in the cover design, under discussion.

Call attention to the way words are grouped and placed according to their importance.

Emphasize the importance of well proportioned margins and decorative marginal lines.

Consult a worthwhile text for modern lettering. (Refer to Bibliography of Text books.)

Teach the rules of well planned composition, referring to illustrations by the best illustrators. (Refer to list of illustrations).

State definite dimensions.

Grade the class while working on the problem.

The best designs will be selected for linoleum block arts.

PROBLEM No. 4 - Teach the technique of cutting linoleum blocks.

THIRD QUARTER

PROBLEM No. 1 - Design class pin for the ninth grade class.

PROBLEM No. 2 - Quick action sketches of members of the class drawn in pencil. (Five to ten minute poses.)

PROBLEM No. 3 - Draw perspective sketches illustrating laws of perspective.

FOURTH QUARTER

PROBLEM No. 1 - Draw a story illustration to paint in water-color;

PROBLEM No. 2 - Draw a crayon sketch of a still life group.

PROBLEM No. 3 - Draw a pastel sketch of a still life group.

PROBLEM No. 4 - Briscoe Briefs cover design, frontice piece and departmental heading designs for the June issue.

SOME INTERESTING SYMBOLS OF COLOR[1]

COLOR	REPRESENTED BY	SIGNIFIES	ILLUSTRATIVE NOTES
White	Light	Purity	White-robes-chastity
Prismatic (Union of colors)	Diamond	Innocence	
	Silver	Holiness	
Red	The Ruby	Courage	Red and White roses
	Life Blood	Patriotism	Love and Innocence
		Passion	Satan
		War,Hatred	Evil Spirits
		Anarchy	Purgatory
		Danger	"Though your sins be as 'scarlet'"
Orange	Fire	The Fireside	
		Hospitality	
		Benevolence	
Yellow	The Sun	Goodness of God	Yellow Mantle-St.Peter
	Gold	Fruitfulness	Yellow Journalism
		Dingy,Dirty Yellow,	Quarantine
		'cowardice'	Assigned to Judas
		Deceit	"A yellow streak"
		Treachery	
Green	Spring	Life Fruitfulness	Combined cheerfulness
	Emerald	Promise	with coolness
		Envy	"Green with envy"
Blue	The Sky	Serenity	"True Blue"
	Sapphire	Heaven,	A cool retreating color
		Truth	
		Constancy	
		Discouragement	
		"Blues"	

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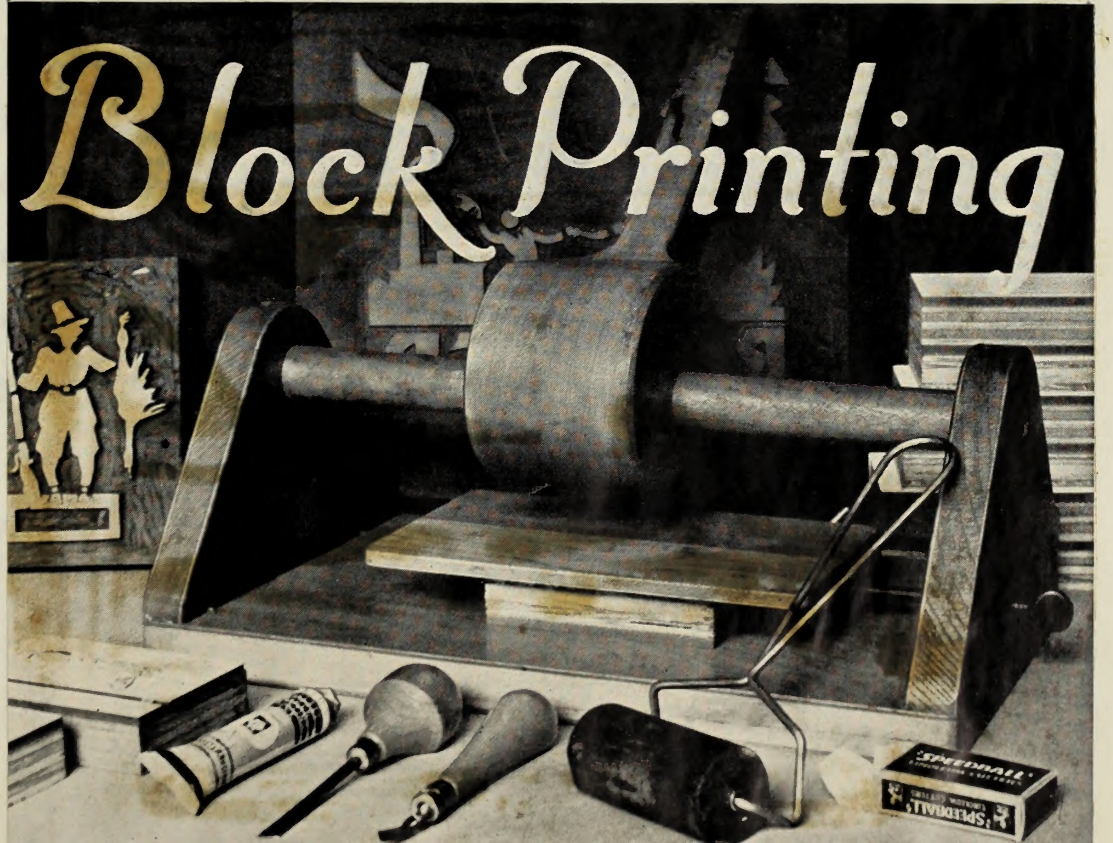
[1] Taken from the Pennsylvania Course in Art Education.

COLOR	REPRESENTED BY	SIGNIFIES	ILLUSTRATIVE NOTES
Purple	Amethyst Twilight	Royalty Loyalty Melancholy Mourning	The color of evening evening and old age "Mystical" therefore used in ceremonies
Gray	Ashes	Renunciation Humility Penitence	Age "Sackcloth & ashes" Martyrs, Friars, etc.
Black	Darkness Night	Ignorance Wickedness Death Mourning Gloom	"Black Sheep"

Metal Tooling

Weaving Crafts
HAND LOOM WEAVING for AMATEURS


Block Printing
SPEEDBALL

GRADE VIII AND GRADE IX

THE ARTS AND CRAFTS CLUB

Organizing clubs and encouraging other extra-curricular activities, which will foster and further the artistic development of talented pupils where training is necessarily limited during regular art lessons, will afford means not only for aesthetic but also for technical appreciation.

A knowledge and use of as many mediums as possible either in manipulation or through demonstration will further an appreciation of art products and processes.

Those pupils interested in the manipulation of material without special drawing ability should be allowed to join the Art Club as well as the talented group.

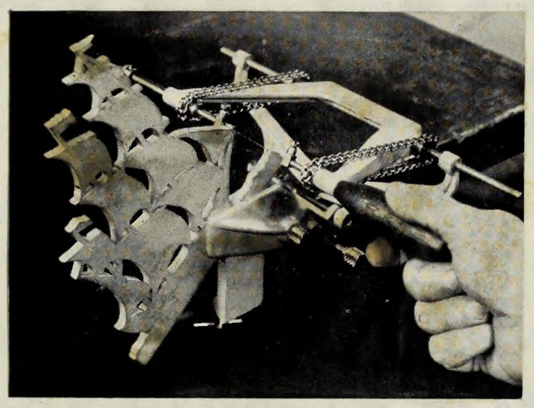
The club members should be allowed to choose the subject they wish to study.

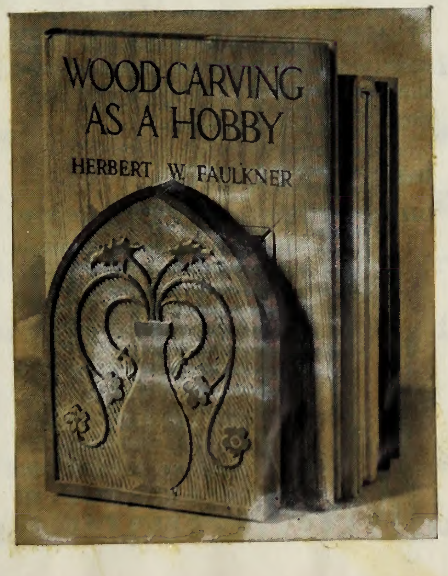
The student should understand that he will pay for his own materials.

Crafts problems which junior high school boys and girls could accomplish are - Leather Carving and Embossing; Birch Craft; Cello-graft; Braiding and Knitting; Beadcraft; Weaving; Batik; Tye Dying; Wood Burning; Puppets; Amberol Craft; Wood Carving; Chip Carving; Linoleum and Wood Block Prints; Soap Sculpture, Paper Sculpture and Stencil Craft.

The following is the method of making wood block prints for pattern -

Craft Work with Wood




WOOD-CARVING AS A HOBBY
HERBERT W. FAULKNER

Printing for pattern is especially interesting. You never know just what you will get and the uncertainty makes the work all the more fascinating. You can, of course, cut a small design which is complete in itself, in which event you know what to expect in printing. But when you have a small block on which there are perhaps a few abstract lines or some detail of a flower, leaf or bud, and it is repeated in various ways, the results are surprising to say the least.

The materials needed for wood block printing are few and inexpensive. All that are absolutely needed are a piece of felt about six inches square, a piece of glass on which to lay it, some oil paints and turpentine, some water colors and a little mucilage, a sloyd knife for cutting the design, two or three small gauges for digging out the background spaces, a wooden clamp and a brace for holding the block firmly to the table or bench on which one is to work. A penknife may be used instead of the other but it is more difficult to use.

Any kind of wood which has a close grain will do for the blocks. Cherry wood is used by the Japanese and Turkish box-wood is used by many of our expert wood engravers. For our purposes pine, maple or gum-wood answer very nicely. The size of the block depends, of course, on the size of the motif to be cut. It is best not to have this too large for the wood is apt to warp and then the block ceases to be of any practical value. However, it is safe to use any size up

to three or three and a half inches in diameter and an inch or more in thickness. The wood is cut on the side with the grain and not on the end grain as for wood engraving. Linoleum may be used in place of wood, in which case it is glued to a block. It is very easy to cut but it does not stand much wear and there is something about its surface that does not hold paint as evenly as wood. Therefore, to get best results one should use wood.

In order to get an even, clear impression from a block one should have a flat responsive surface to work on. Several thicknesses of blotting paper will do, or better still, a pad can be made on a drawing board similar to an ordinary ironing board. For printing large pieces a pad is indispensable.

After the motif which is to be printed is made, it is simply drawn or transferred to the block, or the paper on which it was drawn may be pasted on. The background is then cut away to about an eighth or a quarter of an inch in depth. Sometimes it is necessary to give the block a thin coat of shellac to insure a good printing surface but ordinarily the paint used in printing soon fills up any porous places there may be in the wood.

The process of printing is very simple. The paint is applied to the raised part of the design with a large flat bristle brush or from a pad. The latter is must the quicker way and it is wholly satisfactory. One should be careful not to charge the block too heavily with color for an impression

which destroys all color and texture of the thing printed is undesirable. After a few trials you can tell just how much paint and turpentine to use.

From your sketch book or your book of tracings select a motif simple enough to cut, and after you have cut it, try your hand at printing. Often two or more motifs may be used together to good advantage, just as two or more colors may. If you have a motif which repeats with too marked a movement in one way this may be overcome by cutting an extra block of the motif with the movement going in another direction. By combining the two you get an interplay of movement which is more pleasing than it otherwise would be. This is evident in the two textile designs of last month.

In order to get the best ultimate results one should make a number of preliminary trials for different arrangements in color and pattern and the best one selected for the final printing. For this purpose some varieties of ordinary wrapping paper or just plain wall paper are suitable. Use water colors to which a little mucilage has been added to give them more body. These trials need not be wasted; they can be used for end papers in making books.

Oil colors are the most satisfactory to use in printing on cloth. They bear washing if one does not use strong soap or water that is unduly hot. Turpentine is the medium used with them and enough is added to give a consistency of cream. The color may be "set" after the textile is dry by

pressing it on the wrong side with a wet cloth and a hot iron. Dyes are used too in printing textiles, but they are quite difficult for a beginner to use.

If one makes a few patterns he will not be satisfied until he has made more, and by the time he has made twenty or thirty on the order of those illustrated he will have become familiar enough with the craft to undertake a more difficult problem. Designs can then be made to suit some particular material, such as a chiffon, a linen, a heavy silk or a scrim to be used in making scarfs, covers, table runners or curtains.

CONSTITUTION AND BY-LAWS OF A TYPICAL ART CLUB.[1]

CONSTITUTION

ARTICLE I - NAME

Section 1. The name of this organization shall be - - - - - -

ARTICLE II - PURPOSE

Section 1. The purpose of this organization shall be: -

(1) To arouse and preserve an interest in art.

(2) To enlarge and enrich the aesthetic experience of the members not only by promoting skill in making artistic things but in developing taste in choosing the things which are made use of in daily life.

(3) To cultivate a spirit of cooperation and helpfulness in all things pertaining to the aesthetic betterment of the school.

(4) To offer the members opportunities for improvement in other allied subjects and whenever art training can be applied.

ARTICLE III - MEMBERSHIP

Section 1. All pupils of the Briscoe Junior High School interested in the purposes of the Club are eligible for membership.

ARTICLE IV - OFFICERS

Section 1. The officers of this club shall be a President, a Vice-President, a Secretary, and a Treasurer.

Section 2. All officers shall be elected semi-annually by a majority ballot.

Section 3. All nominations shall be by ballot, the two persons receiving the highest number of votes being eligible.

Section 4. One of the officers must be other than a 9th grade pupil.

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[1] This suggested constitution is adapted from one prepared by G.Winthrop Andrews,Director of Art Ed. Yonkers, N.Y.

ARTICLE V - DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings. He shall fill all vacancies. He shall serve ex-officio on all committees.

Section 2. The Vice-President shall in the absence of the President perform such duties as would otherwise devolve upon the President.

Section 3. The Secretary shall keep a complete and accurate record of all business meetings of the Club, and shall keep a roster of the members. He shall enroll new members. He shall take charge of all matters of publicity.

Section 4. The Treasurer shall collect the dues and take charge of all financial matters. If any member is absent for more than three consecutive meetings without reasonable excuse, the secretary shall notify him of such absence and if such negligence is not corrected before the next meeting, the member will be automatically dropped.

ARTICLE VI - PROCEDURE

The rules of procedure for the monthly business meeting shall be as follows:

1. Reading of the minutes.
2. Treasurer's report.
3. Reports of committees.
4. Unfinished business.
5. New business.
6. Art work.

This suggested constitution is adapted from one prepared by J. Winthrop Andrews, Director of Art Education, Yonkers, New York.

GRADE IX

MECHANICAL DRAWING

Suggestions for the teacher concerning the class problems:

All problems which cannot be illustrated on the blackboard should be drawn in hectograph form so that the individual student will be given a hectographic perspective picture or written statement of each problem.

Every problem must be approved by the teacher before starting the next plate.

All subject matter written in notebooks should be learned.

FIRST QUARTER

PROBLEM No. 1 - Lettering.

METHOD - Directions for fastening the drawing paper on the board and use of mechanical drawing instruments.

Drawing the border lines.

Instructions concerning measurements of margin lines and title block in lower right corner.

Teach the vertical Gothic Capital letter and lower case letters.

Teach the method of drawing mechanically designed numerals.

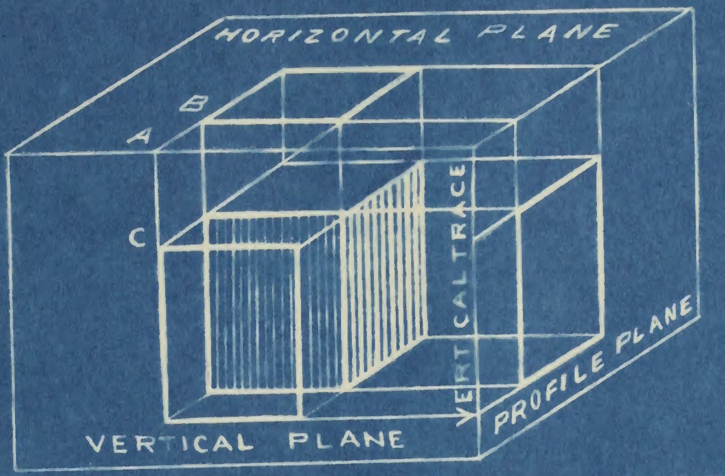
PROBLEM No. 2 - Angles.

METHOD - Teach the class how to recognize the following angles: 30°, 45°, 60° and 75°.

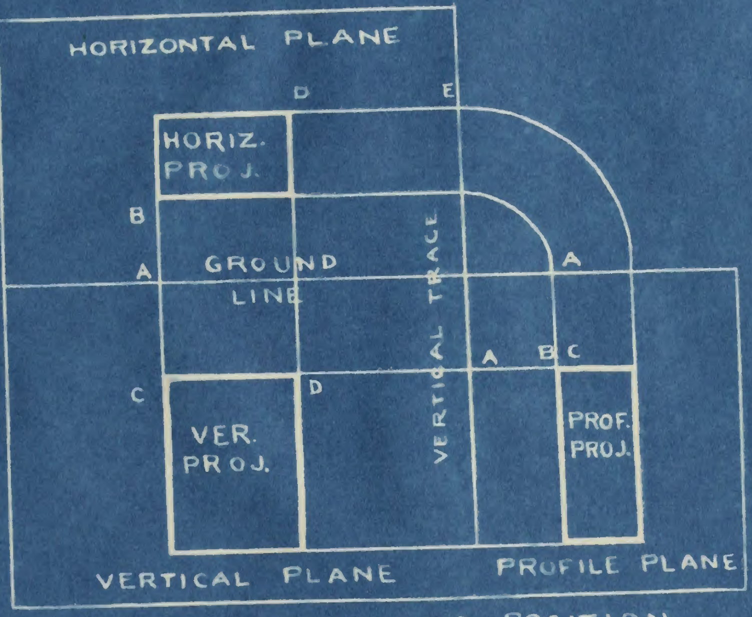
Instruct the class to draw and label their angles.

PROBLEM No. 3 - Geometrical construction.

PROJECTION BOX


HORIZONTAL PLANE
B
A
C
VERTICAL TRACE
PROFILE PLANE
VERTICAL PLANE

DISTANCE A-B IS THE SAME FOR H.& P. PROJECTIONS
”   A-C ” ” ” ” V. & P.   ”
”   D-E ” ” ” ” H & P.   ”


HORIZONTAL PLANE
D
E
HORIZ. PROJ.
B
A
GROUND LINE
VERTICAL TRACE
A
A
B
C
C
D
VER. PROJ.
PROF. PROJ.
VERTICAL PLANE
PROFILE PLANE

PLANES IN REVOLVED POSITION

(a) To erect a perpendicular to a given line from a point without the line.

(b) To bisect an angle.

(c) To trisect a right angle.

(d) To construct an equilateral triangle.

METHOD - These problems must be explained by the teacher and illustrated on the board.

PROBLEM No. 4 - To divide a given line into any number of equal parts.

METHOD - The problem must be explained by the teacher and illustrated on the board.

PROBLEM No. 5 - To construct a pentagon.
To construct an ellipse.

METHOD - The problem must be explained by the teacher and illustrated on the board.

SECOND QUARTER

PROBLEM No. 1 - Orthographic projection of a block.

METHOD - The rectangular block must be looked at from at least three different positions. The three views most generally used are the Top view, Front view, and the Side view.

In order to show these different views on a flat sheet of paper, place the rectangular block inside a box having transparent sides, known as a projection box. Looking down through the top, an outline showing the shape of the surface seen is drawn. In the same way, looking at the front, a rectangular surface is seen and should be drawn. Likewise, the side view appears as a rectangle.

These three views are to be shown in all drawings. In order to do this on a flat surface like a sheet of drawing paper, they are revolved. The top horizontal surface is swung upward through an angle of 90 degrees until it is vertical, and in line with the front of the box. The side vertical view has been turned through an angle of 90 degrees to the right, until it is in line with the other two. The three views now form one flat surface. The top view is directly above the front and the side view is at the right and on a line with the front view.

Before a drawing is started, to present a good appearance, it is necessary to plan its position or location on the paper. The views are separated by two lines known as the horizontal and vertical axis. Proceed with this drawing as follows:

1. Draw horizontal and vertical axis lines.
2. Locate and complete outline of Top view.
3. Locate and complete outline of the Front view by projection.
4. From the point of intersection of the two axis lines, draw a line at 45 degrees. Distance in the Top view is projected horizontally to this line and then continued vertically.
5. By projection from the Top and Front views, locate and complete the Side view.
6. Draw guide lines for title plate. Letter title, school, etc.
7. Erase unnecessary lines. Make the outline of the

views clear and distinct.

PROBLEM No. 2 - Mortised block.

METHOD - Briefly explain orthographic projection in relation to this problem.

Draw three views making a complete drawing.

PROBLEM No. 3 - L Block.

METHOD - Draw three views making a complete drawing.

PROBLEM No. 4 - Notched Block.

METHOD - Draw three views making a complete drawing.

PROBLEM No. 5 - Corner Brace.

METHOD - Draw three views making a complete drawing.

PROBLEM No. 6 - Division of Circles.

METHOD - The problem must be explained by the teacher and illustrated on the board.

PROBLEM No. 7 - Hexagon Inside and Outside Circle.

METHOD - Geometric construction using the compass and angles.

PROBLEM No. 8 - Octagon Inside and Outside a Circle.

METHOD - Geometric construction using the compass and angles.

PROBLEM No. 9 - Square Pyramid.

METHOD - In the Top view the square base of the pyramid is seen of its real shape; this should be the first view of the pyramid drawn.

In the Front view the axis of the pyramid is a vertical line just under the center of the square, - the point which represents the axis is the Top view.

Apply the methods of orthographic projection.

THIRD QUARTER

PROBLEM No. 1 - Truncated Hexagonal Pyramid.

METHOD - Follow the methods of constructing a square pyramid.

Place the angle line which truncates the pyramid in the front view.

Project the points of the angle cut through the pyramid to the top view, with the right angle placed against the T Square.

Project the points of the angle cut through the pyramid to the side view by means of the T Square.

PROBLEM No. 2 - Truncated Cylinder.

METHOD - Divide Circle of 3" diameter into twenty-four parts.

Place line of cut in front view.

Follow the methods of projection used in orthographic projector and those also used in the construction of the hexagonal pyramid.

PROBLEM No. 3 - Truncated Cone.

METHOD- Divide a circle of 3" diameter into twenty-four parts.

Place the line which truncates the cone on the front view.

Follow the methods of projection used in orthographic projection and those also used in the construction of the hexagonal pyramid.

PROBLEM No. 4 - Rules for Dimensions.

METHOD - The following are the Rules for Dimensions, which should be dictated to the boys. These rules should be carefully written in small notebooks.

(1) Figures shall read from the bottom and right hand sides of the drawing.

(2) Dimensions of length shall be placed between views where practicable, and rarely upon them. Dimensions of width and height shall be placed at the right rather than at the left. Minor dimensions may be placed on a view.

(3) Over-all dimensions shall always be given and placed outside all sub-dimensions.

(4) Dimensions from invisible edges shall be avoided when possible.

(5) Circles are dimensioned by their diameters, and arcs by their radii.

(6) Dimensions placed on inclined dimension lines are to read right handed.

(7) Section lines shall be broken for a dimension placed in a sectional area.

(8) Dimensions placed on one view shall not be repeated on others.

(9) Dividing lines of fractions shall not be inclined but shall be made so that if extended they will coincide with dimension lines.

(10) Dimensions shall never be placed on center lines and shall never be crossed by a line.

(11) Dimensions two feet or less shall be indicated in inches thus 12", 24", etc.

(12) Denote feet and inches thus - 6' - 10".

(13) Dimensions shall be from finished surfaces or from center lines.

(14) Dimensions shall indicate full size, independent of scale.

(15) Finished surfaces shall be denoted by the letter "F" (1)

PROBLEM No. 5 - Kinds of lines used in mechanical drawing.

METHOD - The following should also be dictated for the class to write in small notebooks.

(1) The light full line is used the most; it is used for drawing the outlines of figures and all other parts that can be seen by the eye.

(2) The dotted line, consisting of a series of very short dashes is used in showing the position and shape of that part of the object represented by the drawing which is concealed from the eye in the view shown; for example, a hollow prism closed on all sides. The hollow part cannot be seen; hence its size, shape, and position are represented by dotted lines.

(3) The broken-and-dotted line, consisting of a long dash, and two dots or very short dashes repeated regularly is used to indicate the center lines of the figure or parts of the figure, and also to indicate where a section has been taken when a sectional view is shown. This line is sometimes used for construction lines in geometrical figures.

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[1] New York Syllabus for Mechanical Drawing

(4) The light broken line, consisting of a series of long dashes, is used in putting in the dimensions, and serves to prevent the dimension lines from being mistaken for lines of the drawing.

(5) The heavy lines are made not less than twice as thick as the light full lines, and are used for shade lines.

Further explanations in regard to these lines should be given when the necessity for using them arises.

PROBLEM No. 6 - Working drawing of a wood joint.

METHOD - This plate shall be made from the dimensions given on the hectographed problem page.

Scale: Full size.

The dimensions should be given on the problem, applying the "Rules for Dimensions and the Lines" problems.

PROBLEM No. 7 - A Grooved Block, a part of a machine that moves back and forth and travels in some form of guide or groove. The block should show three forms of grooves.

METHOD - Teach scale drawing. Draw three views making a complete working drawing of the Grooved Block. Show overall dimensions indicated in hectographed picture of problem.

Draw the rectangular groove in the front view first, and by projection show it in the top and side views.

The dove-tailed groove should be first drawn in the side view, and then completed in the top and front.

In like manner, the beveled groove should be drawn first in the top view and then projected to the front and side dimension.

PROBLEMS FOR ADVANCED PUPILS - Slide Rest or Bearing Cap.

FOURTH QUARTER

PROBLEM No. 1 - Loose Pulley. A three wheel Pulley is shown by moving a belt from the larger to the smaller pulley, the driving speed can be increased or decreased as the case may be. The Pulley has been hollowed out to make it lighter in weight. The hole in the center is for the shaft on which it is placed.

METHOD - Draw two views, the top and front, making a complete working drawing of the Pulley Dimension.

PROBLEM No. 2 - Gland, - an adjustable cover for a valve or piston. It is designed with projecting parts or lugs, and with holes for bolts, in order to tighten it in its proper position for a rod or shaft.

METHOD - Make a drawing of the Gland showing three views. Be careful about the spacing between the views. Complete the top view first. Notice that the outline of the base is made up of arcs of circles and straight lines. Draw the entire circles at the ends of the base as well as at the center. The straight edge should then be drawn tangent to both curves.

Dimension, and indicate invisible lines.

This is an excellent problem to ink or trace.

PROBLEM No. 3 - Pedestal, - a bearing designed to support a shaft above a floor or any fixed surface. It consists of two parts, the box which supports the journal and the cap which is screwed down to the box by two screws or bolts called cap-screws.

METHOD - Draw two views following the methods of orthographic projection.

Draw invisible lines.

Dimension.

PROBLEM No. 4 - Hand Wheel.

METHOD - Show two views.

Indicate invisible lines.

Dimension.

PROBLEM No. 5 - To draw the pattern of a tee-pipe in which all branches are of equal diameter.

METHOD - Refer to "Rogers Drawing and Design Paper." Pages 165-9

SUPPLEMENTARY MATERIAL FOR THE NINTH GRADE MECHANICAL DRAWING

COURSE OF STUDY

MECHANICAL DRAWING

[1] Mechanical drawing as a subject is rich in educational values. It develops the powers of visualization and imagination and to think in terms of two or more dimensions. By means of drawings, ideas are expressed in graphical form, and the mind and hand are co-ordinated to do neat and accurate work. It is a universal industrial language for transmitting information about an object that would be difficult to express in words.

Other objectives of the course outlined in this text are as follows:

1. To develop the ability to do good lettering which is an important part of every course in drawing.
2. To be able to read or interpret and make complete working drawings of simple objects according to modern drafting-room practice, as used in industries.
3. To develop skill in the handling of the drawing instruments and tools.
4. To interest and prepare the student for more advanced technical or vocational training in drafting or related shop courses.
5. To develop good habits in working with others,

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[1] Mechanical Drawing for High Schools - Edwin S. Youngberg, Lane Technical High School, Chicago, Ill.

courtesy, cooperation, accuracy, as well as neatness, completeness and promptness.

As a cultural subject as well as a practical one, mechanical drawing must be studied and taught the same as any other language. Although the pupil may have no intention of becoming a draftsman, at some time or other in his life's work it will be an advantage to have acquired the ability to make a good drawing that others can read, and also to be able to understand drawings made by others. [1]

METHODS OF TEACHING MECHANICAL DRAWING

Presentation of a lesson should include a brief review of such principles already taught as one involved in the new lesson.

State briefly the aim of the lesson, calling attention to new features, construction, material and general appearance of models under consideration. By proper questions stimulate keen observation upon the part of pupils. Show good examples of work representing model or one similar in type and construction. Make sure that such examples are satisfactory as to correct drawing, etc., and that they have properly executed marginal lines and lettering to complete an acceptable plate.

Class criticism is valuable when work of an entire class is exhibited for discussion and criticism. The application of, adherence to, or violation of known principles should be made

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[1] Mechanical Drawing for High Schools - Edwin S. Youngberg, Lane Technical High School, Chicago, Ill.

plain through proper questioning. Suggested corrections may be made at the blackboard by pupils as a part of constructive criticisms. The correct statement of all principles applicable to the drawings under consideration will also prove helpful.[1]

The benefits of a prepared course of study cannot be realized unless the class is kept together as a unit. To give individual instruction would eliminate class discussion, interest and enthusiasm. It would be impossible for an instructor to prepare an individual lesson plan for each student over a wide range of work. He can correct errors more efficiently when the class is working as a unit. The fast student is taken care of by working additional problems, illustrating the same principles as are involved in the day's lesson. In preparing the lesson plans, only one or two items of any subject are involved in each lesson. Then by illustration, discussion and application, these are fixed in the student's mind. Where repetition of any point is necessary, it may be secured in a variety of ways. Freehand sketching, blackboard sketching, instrumental drawing, verbal explanation and oral discussion, are used to work an idea over and over until it is firmly fixed.

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[1] Syllabus for Mechanical Drawing, The University of the State of New York Press, University of the State of New York, 1928.

[2] The Course of Study in Related Drafting by Otto V. Guenther, from the School Magazine, Seneca Vocational High School, Buffalo, N. Y., Pages 8, 9, 10.

KINDS OF DRAWING [1]

A PROJECTION DRAWING

A projection drawing, so called, represents each view or face of the object separately, these separate views are so arranged as to bear the proper relationship to one another. The broken lines represent edges that are hidden or invisible.

A REPRESENTATIVE PICTORIAL DRAWING

A representative or pictorial drawing is one that shows an object as it appears when viewed from a point from which two or more of the faces or sides of the object are seen. The drawing of a box may be of this type. The parallel edges appear to vanish and to meet at a distant point. This is also called perspective drawing.

AN ISOMETRIC DRAWING

An isometric drawing is similar to a perspective, but the parallel edges are drawn parallel and not to a vanishing point as in perspective.

ASSEMBLY DRAWING

A drawing which shows the various parts of an object assembled in their relative positions is known as an assembly drawing. Such a drawing usually has only a few of the larger reference dimensions upon it, or none at all.

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A DETAIL

A detail is a drawing of a single part to a larger scale than the assembly. It is intended for construction purposes and should therefore be dimensioned.

A WORKING DRAWING

A working drawing is a drawing which shows the shape and size of all parts of the object. It is a drawing from which the object may be made or constructed. A working drawing is made roughly, without particular reference to the actual dimensions, a sketch. If the dimensions are indicated, it it then called a working sketch.[1]

SCENOGRAPHIC PROJECTION

To project means to plan, to scheme, to delineate, to draw the outline of a thing.

In the drawing of objects viewed from a finite distance, the lines joining the several points of the object and the point of sight, called lines of sight, may be said to project the image of the object on the retina of the observer's eye (one eye only being used, since but one point of sight is assumed) and the lines themselves, said to be lines of projection or projecting lines. If these lines be intersected by a plane and the points in which they pierce the plane be connected by straight lines, a drawing of the object will be obtained which is said to be projected onto that plane; such a drawing is an example of scenographic projection.[1]

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[1] Elements of Mechanical Drawing - Jamison.

GEOMETRIC CONSTRUCTION

This instruction may be incidental to the use of such construction in working drawings and may be given in connection with instruction in the use of instruments.

It is suggested that in teaching these constructions in relation to working drawings that the geometric problem involved be drawn to a larger scale and placed by itself in a space on the sheet. A short statement of the problem neatly lettered shall be included. This tends to emphasize the points to be remembered.

Use three different widths of line: medium for given lines, heavy for result lines, light for construction lines.

The following geometric constructions may be taught when time allows:

1. To erect a perpendicular to a given line.
    - (a) At the end of the line.
    - (b) From a point outside the line.
    - (c) From a point in the line.
2. To draw a line parallel to a given line.
3. To bisect a line, an arc, an angle.
4. To construct an angle equal to a given angle.
5. To construct a triangle, equilateral, isosceles, scalene.
6. To trisect a right angle (The right angle must be constructed.)
7. To draw a circle through three points not in a straight line.

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7. To draw a circle through three points not in a straight line.

SECTIONS

OFTEN THE TOP, FRONT & SIDE VIEWS OF AN OBJECT WILL NOT SHOW THE CONSTRUCTION COMPLETELY. IN SUCH CASES ADDITIONAL VIEWS SHOWING PORTIONS OF THE OBJECT IMAGINED CUT AWAY MAY BE USED. THESE ARE KNOWN AS SECTIONS. FIGURES 1 TO 5 ARE THE MOST COMMON EXAMPLES.

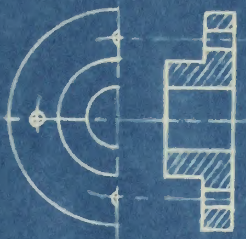


FIG. 1
HALF SECT.

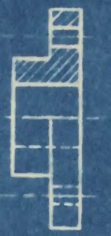


FIG. 2
QUARTER SECT.

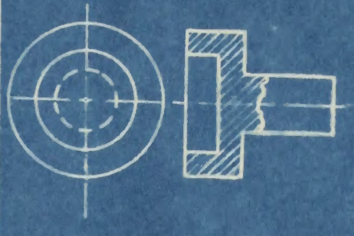
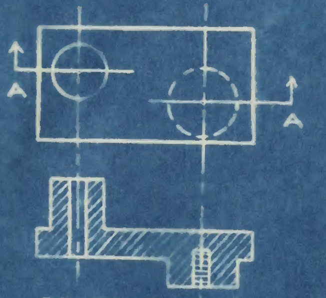


FIG. 3
PARTIAL SECTION



SECTION A-A
FIG. 4
SECTION ON BROKEN LINE

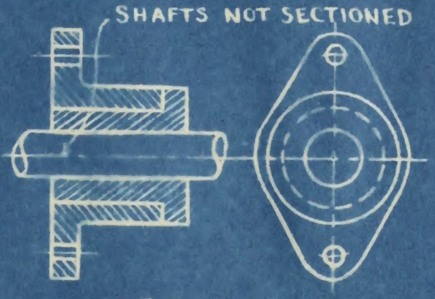
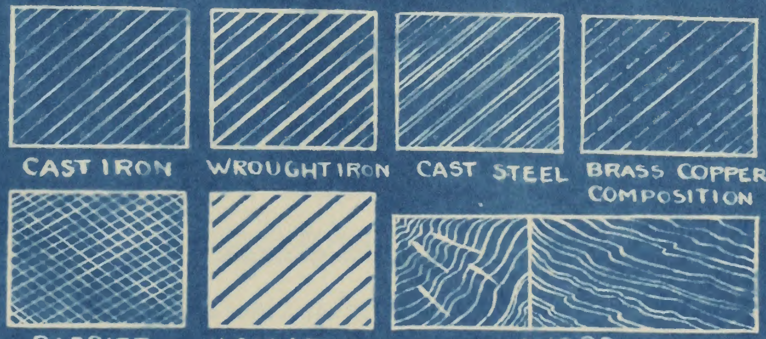


FIG 5
ASSEMBLY SECTION - ADJACENT PARTS SECTIONED IN OPPOSITE DIRECTIONS.



CAST IRON — WROUGHT IRON — CAST STEEL — BRASS COPPER COMPOSITION
BABBITT — INSULATION — WOOD

CONVENTIONAL CROSS SECTIONING

– –

8. To inscribe a circle within a triangle. Indicate one radius which is perpendicular to a side of the triangle.

9. To draw a hexagon.

(a) Having a given long diameter.
(b) Having a given short.
(c) Having a given side.

In all problems involving the tangent, points of tangency must be indicated.

10. To draw an arc of a given radium tangent to two straight lines. Apply 1 and 2.

11. To draw an arc of a given radium tangent to a circle and to a straight line or another arc.

12. To draw a true ellipse.

13. To draw an approximate ellipse.

14. To draw a pentagon having a side given.

15. To draw a pentagon within a circle.

16. To circumscribe a circle about a triangle (through three points not in a straight line).

17. To construct angles of different degrees, 90°, 45°, 23½° etc., 60°, 30°, 15°, 7½°, etc. and combinations of these.

18. To divide a given line into any number of equal parts.

SECTIONS

A section is a view which represents the interior of an object as though it were visible. The purpose of a section is to show the construction more clearly.

Sections are usually taken either across or lengthwise of the object and are designed as "cross section" and "Longitudinal Section" respectively. Sections are also made horizontally and vertically.

That part of the object which is cut open or made visible by the section is indicated by light, slanting lines, drawn parallel and about 1/16" apart. A difference in the slant of section lines denotes different pieces.

The kind of material of which a piece is made is often represented by a conventional section line.

The shape of a piece may also be shown by a conventional break of section, as a shaft, a pipe, or a bar.

A SCALE DRAWING

A scale drawing is one that is made exactly in accordance with the actual dimensions. If it is drawn to the same size as the object, it is said to be "scale full size" or 12" - 1 ft.; if drawn to one-half size, 6" - 1 ft. and so on. The following are the common standard scales:

Scale 12" - 1 ft., full size
Scale 6" - 1 ft., half size
Scale 4" - 1 ft., third size
Scale 3". - 1 ft., quarter size
Scale 2" - 1 ft., sixth size
Scale 1½" - 1 ft., eighth size
Scale 1" - 1 ft., twelfth size
Scale ¾" - 1 ft., sixteenth size
Scale ½" - 1 ft., twenty-fourth size
Scale 3/8" - 1 ft., thirty-second size
Scale ¼" - 1 ft., forty-eighth size
Scale3/16" - 1 ft., sixty-fourth size
Scale 1/8" - 1 ft., one hundred twenty-eighth size.

RULES OF PRACTICE[1]

(a) In making a working drawing of an object the views that show it best should be selected, using sections and details in preference to other views, and omitting unnecessary views altogether. Where a note will serve instead, a view

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[1] Agricultural Drafting, Charles B. Howe, Wiley Technical Series, John Wiley & Sons, Inc., N. Y. 1913.

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RULES OF PRACTICE[1]

(a) In making a working drawing of an object the views that show it best should be selected, using sections and details in preference to other views, and omitting unnecessary views altogether. Where a note will serve instead, a view may be omitted. A view which shows only circles should be omitted and "D" or "Dia" (diameter) should be placed after, the circular dimensions.

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[1] Agricultural Drafting, Charles B. Howe, Wiley Technical Series, John Wiley & Sons, Inc., N. Y. 1913.

(b) Drawings should be made to as large a scale as possible. In no case should other than a standard scale be used. Details should be drawn full size when practicable.

(c) Dimensions should be placed outside the views as far as practicable, and should be grouped. It is preferable to place the dimensions below and to the right of the views. Place as many dimensions as possible in connection with one view - the one furnishing the most information, and do not repeat them.

(d) Always dimension the visible edges, if possible. Over-all dimensions should always be given, and these should be placed outside of all sub-dimensions. Lines for dimensions should be at least $\frac{1}{4}$" apart.

(e) Do not allow the dimensions to be crowded or to interfere with each other or with the lines of the drawing.

(f) If a dimension space is small, place the figures outside and invert the arrows, or indicate by an arrow the part to which the figures refer.

(g) The figures denoting dimensions should read from the bottom and right; they should never be placed on a center line or on a line which would cross them.

(h) Circles are dimensioned by their diameters and arcs by their radii. Dimensions should read to the center lines of circles and not to the circumferences.

(i) Denote feet and inches thus:

(a) 6' - 10", (b) 6 ft. 10", (c) 8 ft., 0¾".

When the greatest dimension does not exceed two or three feet, figure the whole drawing in inches, omitting the " marks.

(j) Bolt holes and similar parts are dimensioned from center to center. If spaced equally and arranged in a circle give the diameter of the middle circle.

(k) Dimensions should be chosen with reference to the measurements, which will be made in constructing the object. Dimensions should indicate full size independent of scale.

(l) The length, breadth, thickness, and location of every part must be clearly indicated. It is not expected that the workman is to add or subtract dimensions; that is the business of the draftsman.

(m) Sub-dimensions should be added and the total checked with the corresponding over-all dimensions.

(n) A section of a symmetrical piece should be made symmetrical, as a half section is often used, unless the part is small.

(o) Section lines should be spaced in accordance with the size of the sectional area and should be broken for a dimension within the area. Indicate the place at which a section is taken.

(p) In some cases parts lying in the plane of the section are not sectioned or are omitted altogether, it is not

usual to section bolts, nuts, screws, shafts, keys, arms of wheels (lengthwise) etc.

(q) The drawing should show the object in a natural position. When several details are shown on the same sheet, keep the related parts near together.

(r) Parts such as bolts, screws, etc., that are well represented in one view may be omitted in the others, and only the location need be shown.

(s) The notes on a drawing are important. Give all the information needed, and express it accurately and concisely.

(t) Begin the drawing with the most important view; but it is usually advantageous to build up all views simultaneously, projecting one to another.

Drawings of machine parts are made in accordance with the fore-going rules, but their nature requires some additional information.

(u) Pieces having surfaces that are to be machine finished should be designated in the drawing by the letter "F" on the projections of the surfaces, or F.A.O. when finish is to be all over.. The dimensions on such pieces should always be for the finished size.

(v) Threads for belts and screws are represented conventionally.

(w) The form of the thread and the number of turns per inch, or pitch, should be denoted. If a thread is left hand, that fact should be stated in a note.

(x) A tapped hole is an interior thread. Tapped holes and nuts are shown by the same convention as a screw, the line being broken if visible.

MECHANICAL DRAWING EXHIBITS

Pride should be stimulated in producing fine work, well lettered, carefully executed and well mounted. Such work should be shown from time to time in school and in local exhibitions.

Wall space should be set apart for the hanging of exhibits. The background should consist of suitable material as cork board, linoleum, beaver board, or wood covered with burlap, art crash, etc. Illustrative problems expecially adapted to the work of the class should be constantly in view. Such material should be continually changed as the class problems progress, each exhibit illustrating the principles under discussion.

V

TENTATIVE COURSES OF STUDY

IN

ARCHITECTURE

ART APPRECIATION

COMMERCIAL ART

COSTUME DESIGN

CRAFTS

DESIGN

HISTORY OF ARCHITECTURE

ILLUSTRATION

MACHINE DESIGN

MECHANICAL DRAWING

METAL CRAFT

POTTERY CRAFT

REPRESENTATION

STAGE CRAFT

SCULPTURE

AND

SURVEYING

FOR THE

SENIOR HIGH SCHOOL

TENTATIVE ART AND MECHANICAL DRAWING PROGRAM FOR THE SENIOR HIGH SCHOOL

No.______ Name ________________________________

Room ____ Course ________________________ Grade ______

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	CRAFTS I Room	Mech. Drawing Room I	CRAFTS I Room	Mech. Drawing Room I	CRAFTS VI Room
2	Mech. Drawing Room II	Representation Room I	Mech. Drawing Room II	Representation Room I	Room
3	Room	CRAFTS II Room	Mech. Drawing Room III	CRAFTS II Room	Mech. Drawing Room III
4	CRAFTS III Room	CRAFTS IV Room	CRAFTS III Room	CRAFTS IV Room	Room
5	Room	Decoration I Room	Mech. Drawing Room IV	Decoration I Room	Mech. Drawing Room IV
6	CRAFTS V Room	CRAFTS VI Room	CRAFTS V Room	Mech. Drawing Room V	Mech. Drawing Room V

Art and Mechanical Drawing Program for Senior High School during 1937-38

No. ______ Name ________________________________

Room ____ Course ________________________ Grade ______

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	Art Appreciation Room	Costume Design Room X	Design X Room	Costume Design Room X	Art Appreciation Room
2	Costume Design Room XI	Illustration Room XI	Design X Room	Illustration Room XI	Costume Design Room XI
3	Costume Design Room XII	Commercial Art Room XI	Design XI Room	Commercial Art Room XI	Costume Design Room XII
4	Representation Room X	Commercial Art Room XII	Design XI Room	Commercial Art Room XII	Representation Room X
5	Commercial Art Room X	Sculpture Room	Room	Sculpture Room	Commercial Art Room X
6	Illustration Room XII	Room	Room	Room	Illustration Room XII

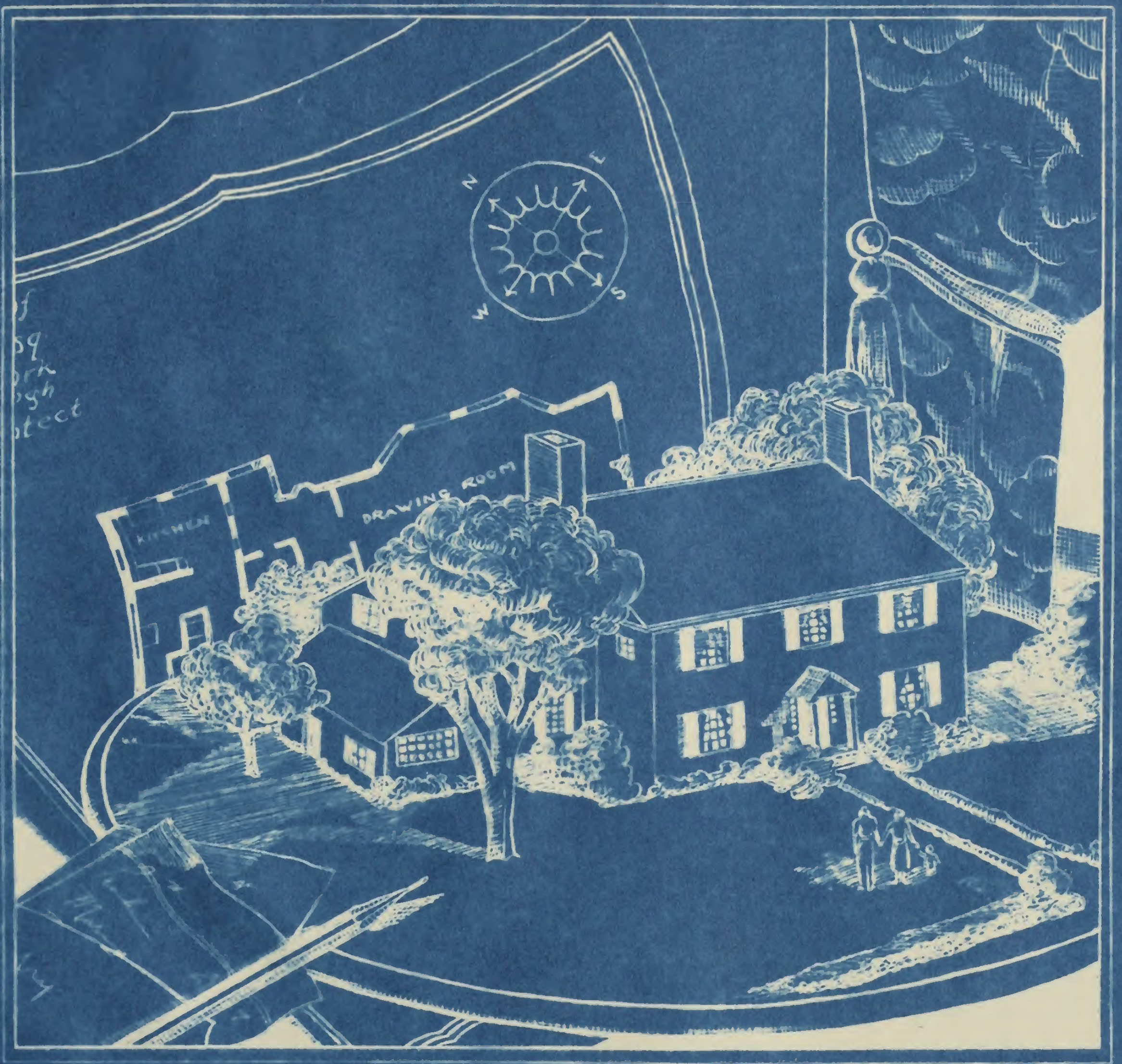
Tentative Program for the Art teacher in the Senior High School

No ______ Name ________________________________

Room ____ Course ________________________ Grade ______

Hrs.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	Stage Craft Room	History of Architecture Room X	Machine Design Room XII	History of Architecture Room X	Stage Craft Room
2	Architecture Room XI	Mech. Drawing Room XI	Machine Design Room XII	Mech. Drawing Room XI	Architecture Room XI
3	Metal Craft Room XI	Study Hall for Make-up Work Room	Surveying Room XII	Study Hall for Make-up Work Room	Metal Craft Room XI
4	Pottery Craft Room	Mech. Drawing Room X	Surveying Room XII	Mech. Drawing Room X	Pottery Craft Room
5	Crafts Room	Metal Craft Room XII	Room	Metal Craft Room XII	Crafts Room
6	Architecture Room XII	Room	Room	Room	Architecture Room XII

Tentative Program for the Mechanical Drawing and Crafts teacher of the Senior High School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KITCHEN
DRAWING ROOM

ARCHITECTURAL DRAWING

ARCHITECTURAL DRAFTING

OBJECTIVES

It is the aim of these courses to give the student an appreciation of good design and planning, an adequate amount of drawing technique; and a comprehensive grasp of the subject.

The two courses are not for the purpose of giving a great deal of technical knowledge as the time allotted is not sufficient for the development of highly trained, technical minded architects.

The ability of original designing and planning should be developed. A sense of good taste in Architecture as well as an appreciative interest in the subject should be acquired. The student should also acquire an ability that he may use in later life to intelligently plan a home of his own.

Technically the courses should teach the details of house construction, the correct procedure in laying-out and drawing a set of plans, how to read and write specifications, real estate facts, and important phases of insurance and financing as applied to home ownership.

September, 1932

INDUSTRIAL EDUCATION MAGAZINE

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Shop Tracing
No. 129

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THE MANUAL ARTS PRESS
PEORIA, ILLINOIS

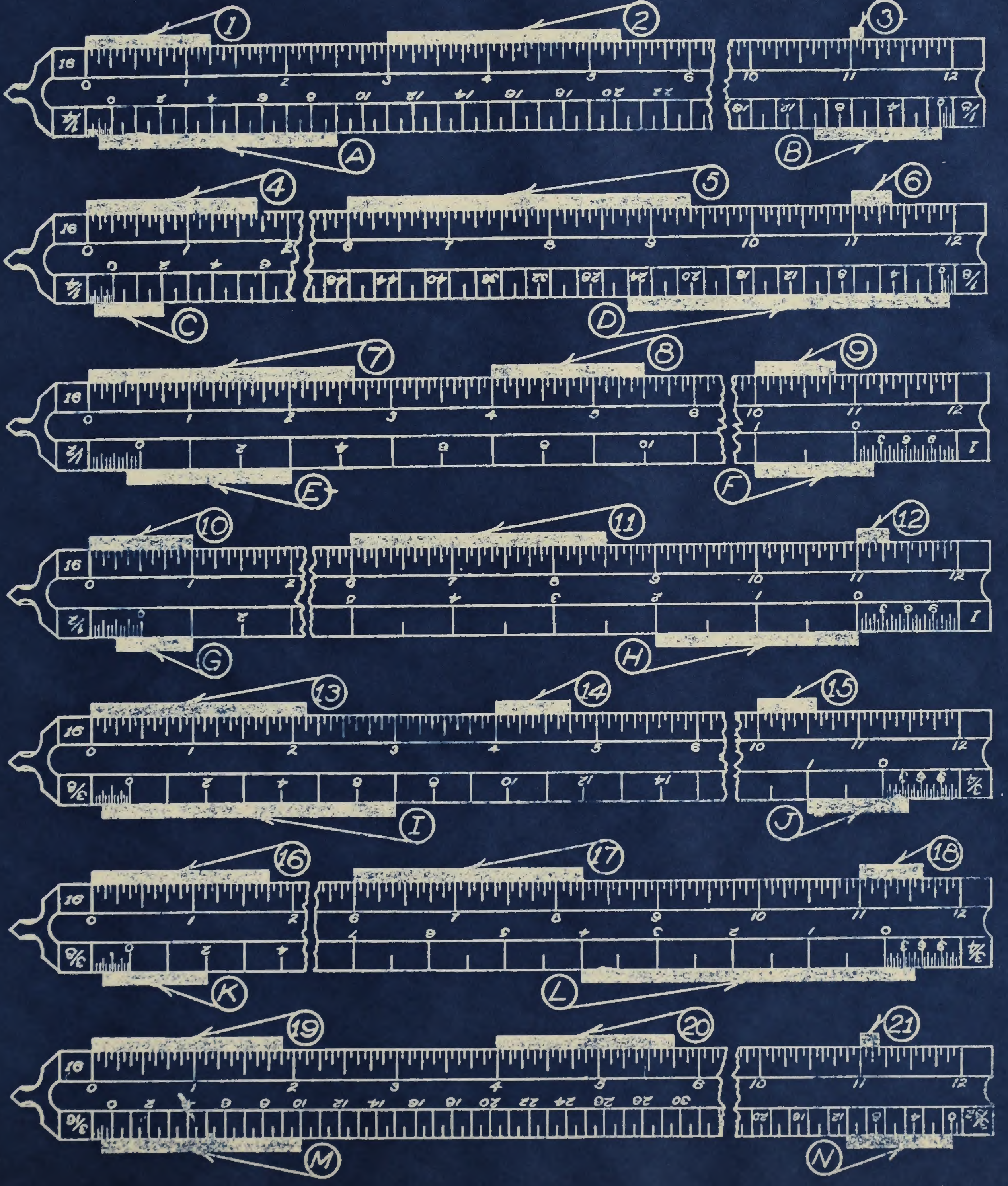
TEST IN READING THE ARCHITECT'S SCALE

O.A.Oaks
New Trier Township High School,Winnetka,Illinois

Instructions to the Student:

Read the size of each darkened portion on the drawings of the architect's scale, and prepare on a sheet of paper a list giving the correct readings, by number, or by letter, as directed.

Reduce all fractions to lowest terms.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3/8
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ARCHITECTURAL DRAFTING GRADE XI

Prerequisite - Mechanical Drawing IX, and X and
History of Architecture X.

Notebooks should be supplied the class. They should take accurate notes concerning discussion subjects.

FIRST QUARTER

PROBLEM No. 1 - Professional.

METHOD - Definition and justification of the course of study.

PROBLEM No. 2 - Architectural Lettering.

METHOD - The student should complete several exercises in architectural lettering to acquire a knowledge of the form of the capitals, lower case letters and numerals used in architectural drawings.

PROBLEM No. 3 - Architectural Conventions.

METHOD - Illustrate and name the following - Inside Door, Outside Door, Outside Door in Brick Wall, Double Heavy Window in Frame Construction, Casement Window in Frame Construction, Single Sash in Frame Construction, Materials used in Plans.

PROBLEM No. 4 - Brick Bonds.

PROBLEM No. 5 - Flat or Jack Arch.

PROBLEM No. 6 - Window in Stone Wall.

SECOND QUARTER

PROBLEM No. 1 - Structural Steel Drawing.

METHOD - Discussion of this type of drawing.

PROBLEM NO. 2 - Structural Steel Shapes.
Structural Steel Rivets.
Structural Steel Columns.

PROBLEM No. 3 - Reinforced Concrete.

METHOD - Discussion of this type of drawing;

PROBLEM No. 4 - Concrete Flower Pot.

PROBLEM No. 5 - Concrete Garden Pool.

PROBLEM No. 6 - Concrete Garden Seat.

THIRD QUARTER

PROBLEM No. 1 - Building Regulations.

METHOD - Discuss the following - Building codes, Ordinances and inspection.

PROBLEM No. 2 - Discussion of elements of frame house construction.

(a) One story houses (1) Frame (2) Veneer
(b) Room arrangement.
(c) Proportion.
(d) Rules of design.
(e) Furniture layout.

PROBLEM No. 3 - Box Cornice.

PROBLEM No. 4 - Section through Sill and Wall.

PROBLEM No. 5 - Section through Double Hung Window Sill.

PROBLEM No. 6 - Open Cornice.

FOURTH QUARTER

PROBLEM No. 1 - Door Jam Casing.
Head Trim.
Sill Trim.

PROBLEM No. 2 - Flemish Corner Bond.
L Type Box Sill.

PROBLEM No. 3 - Choice of drawing one of the following floor plans: Child's Playhouse; Shack for Two Boys, or Boy Scout Cabin.

METHOD - The selection of the subject of this problem will depend upon the skill of the boy or girl in drawing architectural parts.

Show floor plan and elevation.

OCCUPATIONAL INFORMATION CONCERNING ARCHITECTURAL DRAFTING[1]

The representation of building construction is a field which may be divided into two parts: engineering and art. Architectural drawing is concerned with the esthetic arrangement of the exterior and the interior of buildings, the proper sequence of rooms, and the employment of the conveniences and the labor-saving devices of modern civilization. The erection of dwellings, hotels, office buildings, schools, churches, theaters and public buildings as well as public memorials such as arches, fountains, and settings for statuary fall within the province of the architect. He summons to his aid the services of the structural engineer who devotes his time to the design of the steel structures and frame work to carry the burdens which architectural problems present. The structural engineer is therefore subordinate to the architect, although in the design of bridges and other engineering projects he is an independent agent and gets esthetic results as a by-product.

Architectural drafting differs from machine drafting in several respects. In architectural drafting the scale is usually so small that we must use conventional signs for most objects. Windows, doors, electric fixtures, and wiring, plumbing, stairways, chimneys and other parts are not shown

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[1] Exploratory Mechanical Drafting - Industrial Arts Bulletin No. 1, Los Angeles City High School District, 1928.

in detail but by symbols. Instead of showing two or more views of an object as in machine drawing it is seldom possible to show more than one view on a sheet. In drawing a plan it is assumed to be a section taken at the level of the eve, and stairways, scuttles, and other objects either above that level or below the floor are represented by dotted lines. Views representing height are known as elevations.

Architectural drafting, in keeping with the esthetic character of the subject, demands a freer and more decorative treatment than machine drafting. Lettering instead of being severely simple is more inclined to beautiful and graceful forms. Line work is less precise and thinner than in machine drafting. Considerable use is made of color and brush work.

In teaching architectural drawing emphasis should be placed upon the interpretation of the symbols and upon the reading of the usual scales employed. especially $\frac{1}{4}$" to the foot. The average boy will not become an architectural draftsman or an architect, but we hope he will build his own home at some time. He should be able to interpret a plan. He should be informed concerning the location of rooms relative to the north point. The various architectural styles such as the Spanish, New England, Colonial, and English half-timber should be discussed and compared. The brick house should be considered, as brick is a local building material

of considerable importance, and the various types of bond such as American, English, and Flemish can be explained.

ARCHITECTURAL DRAFTING XII

Prerequisites - Mechanical Drawing IX and X,
History of Architecture X and
Architectural Drafting XI

FIRST QUARTER

PROBLEM No. 1 - Double line Architectural Alphabet.

PROBLEM No. 2 - Real Estate.

METHOD - Discuss the following; Sizes of a lot; Plot plans, Home should fit site, Location of lot, and Nature of lot.

PROBLEM No. 3 - Financing.

METHOD - Discuss the follows: Methods of financing; Contracts; Mortgages; Building and Loan Associations; Importance of interest rate.

PROBLEM No. 4 - Insurance.

METHOD - Discuss the following: Necessity, Kinds; How to read a Policy; Premiums.

PROBLEM No. 5 - Landscape of a Flower Garden.

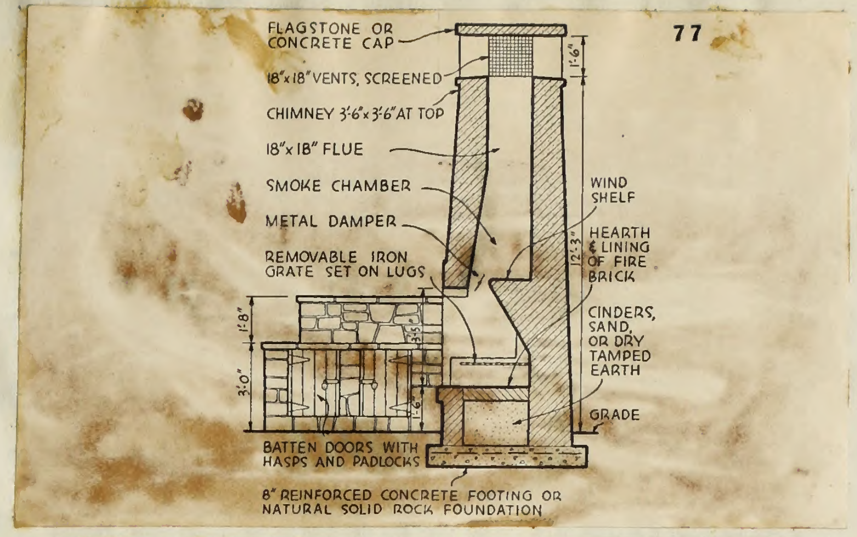
SECOND QUARTER

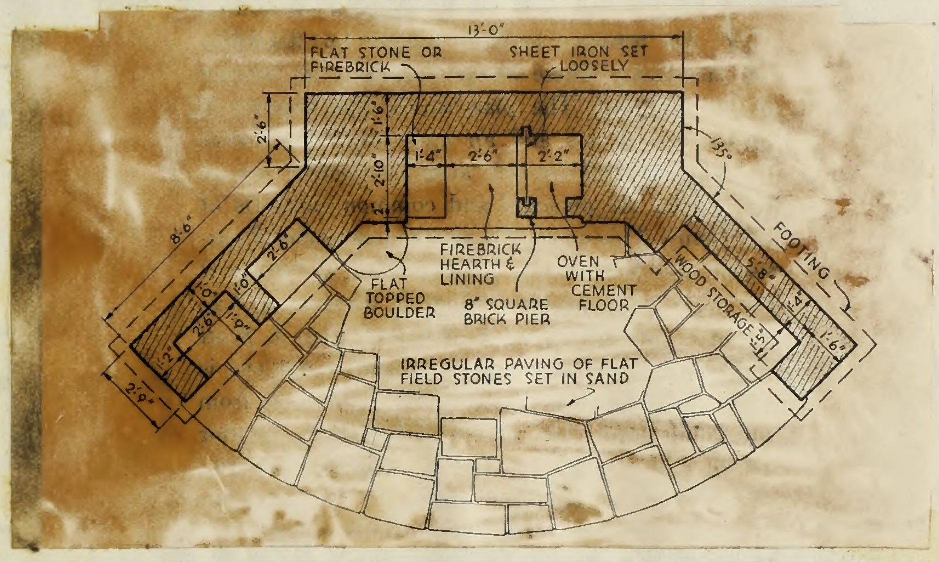
PROBLEM No. 1 - Landscape Layout of a Fifty Foot Lot - Scale 3/2" equals 1"-0"

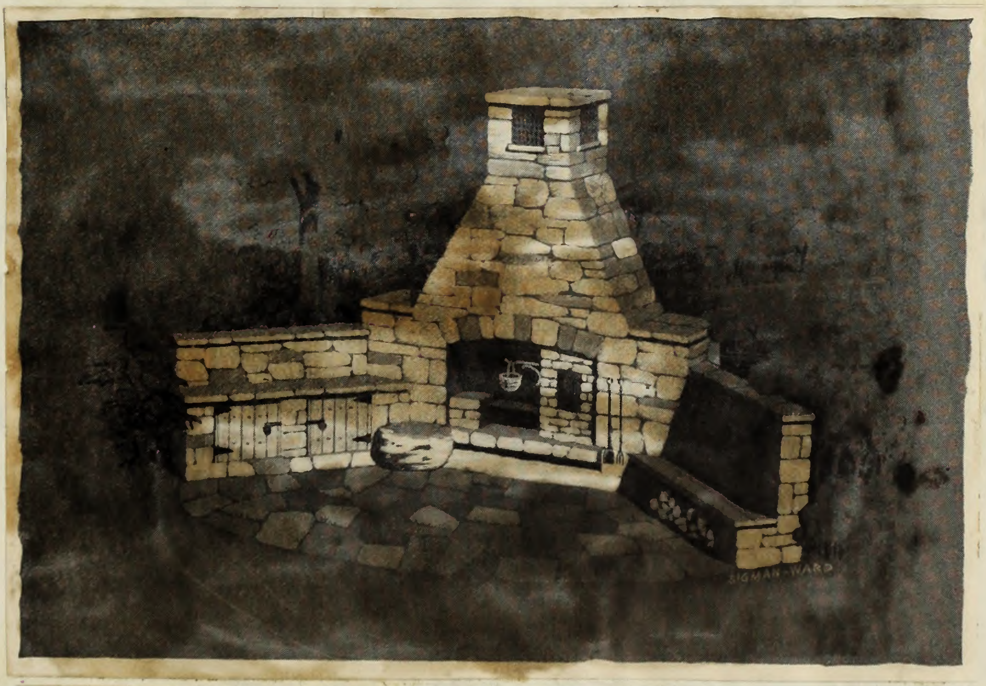
METHOD - This landscape sketch should allow for space for a house, garage, trees, shrubbery, and well designed lawn space.

PROBLEM No. 2 - Landscape Layout for a Lot 50 x 110 - Scale 3/2" equals 1' - 0"

METHOD - This landscape sketch should allow for space for a house, garage,flower and vegetable gardens, groves and well designed lawn space.


77
FLAGSTONE OR CONCRETE CAP
18"x18" VENTS, SCREENED
CHIMNEY 3'-6"x3'-6" AT TOP
18"x18" FLUE
SMOKE CHAMBER
METAL DAMPER
REMOVABLE IRON GRATE SET ON LUGS
1'-6"
WIND SHELF
HEARTH & LINING OF FIRE BRICK
12'-3"
CINDERS, SAND, OR DRY TAMPED EARTH
GRADE
1'-8"
3'-0"
3'-6"
1'-6"
BATTEN DOORS WITH HASPS AND PADLOCKS
8" REINFORCED CONCRETE FOOTING OR NATURAL SOLID ROCK FOUNDATION


13'-0"
FLAT STONE OR FIREBRICK
SHEET IRON SET LOOSELY
2'-6"
1'-6"
2'-10"
1'-4"
2'-6"
2'-2"
135°
8'-6"
2'-6"
1'-0"
1'-0"
2'-6"
1'-0"
1'-2"
2'-9"
FIREBRICK HEARTH & LINING
OVEN WITH CEMENT FLOOR
FLAT TOPPED BOULDER
8" SQUARE BRICK PIER
FOOTING
WOOD STORAGE
5'-8"
1'-5"
1'-6"
IRREGULAR PAVING OF FLAT FIELD STONES SET IN SAND


SIGMAN-WARD

In the drawing and plans above are the facts and figures of an outdoor fireplace which, while making special provisions for the complete cooking of a meal, is decorative under any circumstances and hospitable to even a large group. Dimensions, design, materials and equipment may vary to suit individual tastes, ambitions and purses, but the basic facts of proportion and construction will still obtain

THIRD QUARTER

PROBLEM No. 1 - Fireplace for a one story house.

PROBLEM No. 2 - Stairs for a one story house.

PROBLEM No. 3 - Chimney for a one story house.

PROBLEM No. 4 - Discussion of Wiring, Plumbing, dormers, Bays, and Tiles of a two-story house.

PROBLEM No. 5 - Model Construction.

METHODS - Explain techniques of construction, materials used, and finish. Build simple models.

FOURTH QUARTER

PROBLEM No. 1 - House planning and Designing.

METHOD - Discuss two-story houses including room arrangement, proportion, rules of design and furniture lay-out.

PROBLEM No. 2 - Draw floor plans for a two-story house.

METHOD - A Dutch Colonial or New England Colonial House.

The following problems may be given to the advanced students -

1. Architectural Details such as Wrought Iron railings.
2. Perspective sketches of rooms with furniture correctly placed.
3. Elevations of rooms with furniture correctly placed.

ART APPRECIATION

A study of the fine arts is one of the best means that can be employed for training the mind; developing and refining the judgment, and for obtaining a fund of information that is useful and practical throughout life.

The fine arts embrace many of the essential activities of human life, the building of the home, its furnishings and equipment, the housing of every industry, vocation, or calling, the building of cities, the providing of amusements and many of the features of life upon which we depend for our enjoyment and pleasure.

Art exercises an important influence in the formation of human character. Each individual is constantly called upon to exercise a choice, based upon attractiveness and fitness, of the things which he is to possess and of the activities of life which furnish his pleasures and amusements.

History reveals the fact that those nations in the past which were leaders in commerce and the industries were also the leaders afterwards in the fine arts, and it is also significant that many of the people of America are descendants of those who excelled in the arts in Europe.

To understand the modern movement in art one must know and feel, or to combine both words, one must experience works of art. Experience implies identification with the thing experienced.

Each creation of an artist, is the recording of a unique emotional experience of an individual which must be appraised by other individuals - each appraisal being valid only for its maker.[1]

Properly understood, art appreciation should mean a certain amount of appreciation of all the arts, notwithstanding our principal interest may well be centered in some particular art; for identically the same aesthetic elements run through them all, and identically the same principles underlie them all, although the use of these elements and the application of these principles vary more or less with different arts. Once we learn to understand one of these arts "root and all and all in all," as Tennyson said of the flower in the crannied wall - especially one of the more complex arts, as painting or architecture, we should be able to understand all these arts to the extent that they are based on these elements and principles.

"I know but one art," said Michelangelo, who knew all the arts and was a master of most of them.[2]

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[1] Experiencing Pictures by Ralph M. Pearson, Brower, Warren & Putnam, 1932.

[2] Art and Nature Appreciation by George H. Opdyke, The MacMillan Co., N. Y., 1934.

ART APPRECIATION

It is the purpose of the following Art Appreciation Course to furnish the child with a foundation for artistic judgment and discrimination and to help in teaching him what to appreciate and what to avoid in the many so-called art products continually presented to him in his everyday life. The child should know, for example, why a portrait painted by a great artist such as "The Artist's Mother" by Whistler, is art and why a crayon portrait enlargement is not art; why one building, piece of pottery or other object is artistic and another only useful. A practical art education is of great value because of the wide range of applications that can be made to the practical problems of life; and we should teach art appreciation in such a way that it will function in the actual lives of the pupils.

This course of study should be given in lecture form. The class should keep very clearly written notes. Each subject should be illustrated in their methods by pictures, photographs, drawings or materials.

FIRST QUARTER

PROBLEM No. 1 - The Study of Art.
The Unity of the Arts.
The Special Beauty of Art.

PROBLEM NO. 2 - Art and Subject Matter.
Art and Imitation.
Art and Representation.

PROBLEM No. 3 - Art and Utility.
Studying Art and Nature Side by Side.

SECOND QUARTER

PROBLEM NO. 1 - Light Effects.
High Lights in Nature and Art.
Water Reflections.
Nature's Shadows.

PROBLEM No. 2 - Studying Light and Dark at Home.
Studying Light and Dark Out of Doors.
Studying Light and Dark in Painting.
Light and Dark in Sculpture.
Light and Dark in Other Arts.

PROBLEM No. 3 - Values - What Are They?
Nature's Values Versus the Painter's.
Many Values Versus Few.
Light and Shadeless Art.

PROBLEM No. 4 - Color - What Is It?
Sky Color.
Color Reflections.
Color Mixing.
Color Harmony and Contrast.
Color Values and Intensities.
Live Versus Dead Color.

THIRD QUARTER

PROBLEM No. 1 - Atmosphere.

PROBLEM No. 2 - Perspective.

PROBLEM No. 3 - Tone

PROBLEM No. 4 - Texture Indoors and Out.

PROBLEM No. 5 - Texture in Painting and Other Arts.

PROBLEM No. 6 - Line and Mass in Drawing.

PROBLEM No. 7 - Line and Mass in Painting.

PROBLEM No. 8 - Line and Mass in Sculpture.

PROBLEM No. 9 - Line, Form, and Mass in Other Arts.

FOURTH QUARTER

PROBLEM No. 1 - Unity and Harmony in Composition.

PROBLEM No. 2 - Transition, Opposition, and Contrast in Composition.

PROBLEM No. 3 - Rhythm, Sequence, Alternation, and Radiation in Composition.

PROBLEM NO. 4 - Emphasis, Dominance, and Subordination in Composition.

PROBLEM No. 5 - Proportion and Scale in Composition.

PROBLEM No. 6 - Balance and Symmetry in Composition.

The students should collect plates for the Art Appreciation notebooks to illustrate the following: Form, Texture. Color, Kinds of Line, Line and Shape, Shape, Repetition, Alternation, Repetition and Alternation, Progression, Central Balance and Progression, Kinds of Leather, Kind of Textiles, Kinds of Wood, Kinds of Metal, Kinds of Paper, Kinds of Painting.

LECTURE

THIRD QUARTER - PROBLEM No. 5

TEXTURE IN PAINTING AND OTHER ARTS.

Texture painting is representing in picture the surface appearance of things; making them "look the way they feel"; making, for example, wood look like wood, cloth like cloth, glass like glass, so that one is able to distinguish them as such in the picture. It is not an easy thing to do, yet some painters are so clever at it they can imitate the texture of anything from flesh to feathers.

Representing textures is largely a matter of representing the play of light and shade over them. The one thing the painter must get right is his values, even color and drawing being less important. You will realize still more by studying photographs, for here color plays no part, yet such textures as these of silk, velvet, glass, wood, metal, stone, can generally be distinguished. Try to determine just what are the subtle differences of light and shade that make such differences apparent. Study the textures themselves by partly closing your eyes to shut out distracting light.

Study also the different warp these texture in paintings have been brushed in; that is, the brush marks, for a good deal of texture painting is a matter of brush manipulation.

In a portrait, for instance, observe the relation between the bfush marks and the textures of flesh, hair, drapery, and of various accessories, and notice how the different brush marks help to suggest the different textures. In fact, they may create a texture themselves on the surface of the canvas, thus creating a double play of light and shade, one under the surface of the paint and one over it; that is, one in the objects represented and the other in the brush work. For example, the brush stroke for silk is fluent, has speed; for cloth it is slower, thicker, heavier; for velvet the stroke loses itself, not a sign of its visible; so also for the shadows in the hair. **Compare** the brush work of different artists in treating the hair. After studying such effects close-up, stand back to get the general effect.

You are apt to find some wonderful texture painting in nearly any collection of old miniatures, and done with truly amazing minuteness. Observe the laces, how lacy; the furs, how furry; the silks, how silky; and all in a space the size of your hand.

Painting the outline and pattern of a rug on a floor does not make it look like a rug unless its texture can be distinguished from that of the floor. The painting of a bird in a picture will remain merely a bird-shaped patch of paint unless the artist catches the texture of its feathers. So should the wool on a sheep's back in a picture look like wool, not like wood, and the dirt in a road look like dirt,

not unbleached muslin. But it should not be overdone. The best texture painting is that which says enough and not too much; which enables the observer to distinguish important materials, yet never seems forced or unduly prominent. The artist should never lose his sense of proportion. He should not show more interest, for instance, in the clothes of a sitter for a portrait than in the sitter himself, or more interest in the texture of his hands than in that of his face.

The texture quality of flesh is very difficult to catch and one of the surest tests of portrait painter's skill. Indeed, he should catch not only the texture of flesh but of the sitter's flesh. The lovliest of all flesh textures are generally to be found in the cheek of a fair, healthy young child, three or four years old.

Among those who have excelled in texture painting may be named Steen, Netscher, Terborch, Vermeer, Kalf, Chardin, Stevens, Alma Tadema, Chase and Carlsen. As a rule the later men paint their textures in a braoder, simpler manner than the earlier men.

Texture may be studied and enjoyed in several of the arts. The textures of old tapestries and old Oriental rugs are highly interesting. Whether firm or soft, an old Oriental rug is always smooth, lustrous and mellow. Old tapestries owe their charm of texture to the indefinable quality of the work used in them and to the fact that they were hand-woven. Paradoxical as it may seem hand-woven

fabfics generally have more charm of texture than the machine-made. This is due to their countless tiny technical imperfections and irregularities creating a play of light and shade impossible to a perfect machine-made surface. Compare, for example, a hand-woven cashmere with the machine-made article and note the fairy dance of lights and shadows across the surface of the former and its absence in the latter.

The metals afford some interesting textures. Compare, for instance, the quality of the high lights on gold, silver, brass, bronze, pewter, tin and iron. Of them all, it is generally conceded that humble pewter holds the palm for beauty of texture, though commonly sneered at because of its cheapness. It has none of the dead look of lead, nor the harshness of tin, and it is more restful to the eye than silver and softer to the touch. But for variety of metal textures study Japanese metal work. The metal textures are worked out not only by employing different metals and alloys, but by the chasing and granulation of their surfaces.

Pottery and porcelain make delightful texture study. For sheer beauty and daintiness of material the texture of old Chinese porcelain is equaled only by the finest marble, while their marvelous glazes and jewel-like enamels have never been surpassed.

Few would associate sculpture with considerations of texture, yet they are always present. The material is a matter of texture. The flesh of a figure should show a dif-

ferent texture from that of the drapery or the coat, and the coat a different texture from that of the boot or shoe. In fact, the rendering of the drapery will call for a two-fold consideration of texture, surface texture, and real texture. The folds of the drapery should indicate the real texture. Occasionally, in a sculpture, we see strong contrasts of texture between a figure and its background, as a nude figure emerging from roughly surface stone. Some one has likened this effect to the contrast between an acorn and its cup which, by the way, is a charming example of texture contrast in nature.

The outdoor arts of architecture and landscape design have also their texture problem. Curiously enough, it is only recently that our architects have realized the beauty of texture in wall surfaces and sloping roofs.

Only by comparing the old architecture with the new can we appreciate the advance that has been made in the way of treatment of walls.

In landscape designing, texture effects are worked out not so much by surface textures as by the textures of trees and plants selected primarily for their textures. The landscape architect may harmonize and unify his desigh by employing trees or shrubs of similar texture; or gain effects of emphasis, balance, or rythm by the judicious use of heavy or light-textured foliage. Even a flower bed of various

colors may be unified by the repetition of similar textures throughout. For instance, the corners of a bed may be strengthened by the heavy leaves of the showy stonecrop or the platinum lily, the center of the bed filled by the solid and lasting green of peonies, and along the side of the bed the delicate, misty gyposophila maybe paneled with clumps of iris. Thus, even without a single flower in bloom, such a bed may be very pleasing for its textural effect alone.[1]

By texture an object is represented in such a way that through our tactile imagination we have an imagined sensation of the pleasure of its feel to the touch.

Note - This lecture should be illustrated on the board, as well as with pictures, pieces of sculpture, metal work, china or pottery and textiles.

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[1] Art and Nature Appreciation by George H. Opdyke; The Macmillan Co., N. Y., 1934, pages 372-379.

ART APPRECIATION

QUALIFYING AND DESCRIPTIVE TERMS COMMONLY USED IN DISCUSSING OR DESCRIBING WORK OF ART.[1]

active
adequate
aesthetic
alternating
amusing
antique
appropriate
archaic
architectural
atmosphere
attractive
ancient

balanced on axis
balanced on center
beautiful
brilliant
charming

classical
clear
clumsy
colorful
commonplace
compact
complete
complex
conservative
consistent
contrasting
conventional
creative
crude

decorative
definite
delicate
desirable
dignified
disorderly
distinguished
dramatic
dynamic

elaborate
elegant
emotional
emphatic
energetic
enriched
erratic
exaggerated
excellent
exotic
expressive
exquisite

false
fine
firm
forceful
formal
fragile
free
fundamental

gaudy
geometric
good
graceful
graphic
grotesque

handsome
harmonious
heavy
historic
humorour

idealistic
illustrative
imaginative
impressive
incongruous
informal
interesting
interpretative
intricate

luminous

massive
masterful
mechanical
modern
monotonous
monumental
mysterious
mythological

naturalistic

odd
orderly
ordinary
organic
original
ornamental
ornate

peaceful
pictorial
picturesque
plain
pleasing
poetic
powerful
precious
primitive
quaint
queer
realistic
refined
restful
restrained
rythmic
rich

satisfactory
serene
severe
significant
simple
sincere
spirited
spontaneous
static
strong
structural
stupid
studry
stylish
subtle
suitable
symbolic
symmetrical

tasteful
technical
traditional
true

unique
useful
unusual
valuable
varied
vigorous
vivid
weak

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[1] Art appreciation word list from the Court in Art Appreciation planned for the Boston Schools.

COMMERCIAL ART X

The course deals with the fundamental principles of design, illustration and lettering as related to commercial art. The principles of advertising are studied and various types of designs are made. Designs are carried out in black and white, and in color with special reference to processes of representation.

The high school magazine requires designs for covers, title page and cartoons. This offers practical work in the graphic techniques of commercial processes. Closely akin to this service is the constant demand for posters and lettering.

GRADE X

Prerequisite - Art IX

FIRST QUARTER

PROBLEM No. 1 - Roman capital alphabet.

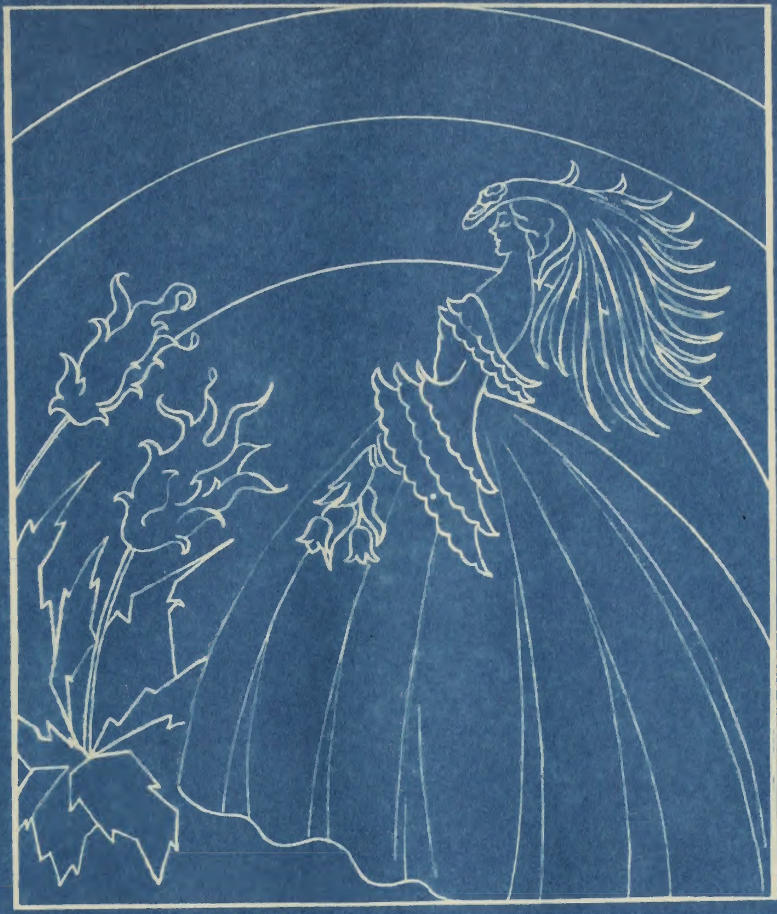
PROBLEM No. 2 - Modern alphabet derived from the Roman capital alphabet.

PROBLEM No. 3 - Lower case alphabets Roman and Gothic.

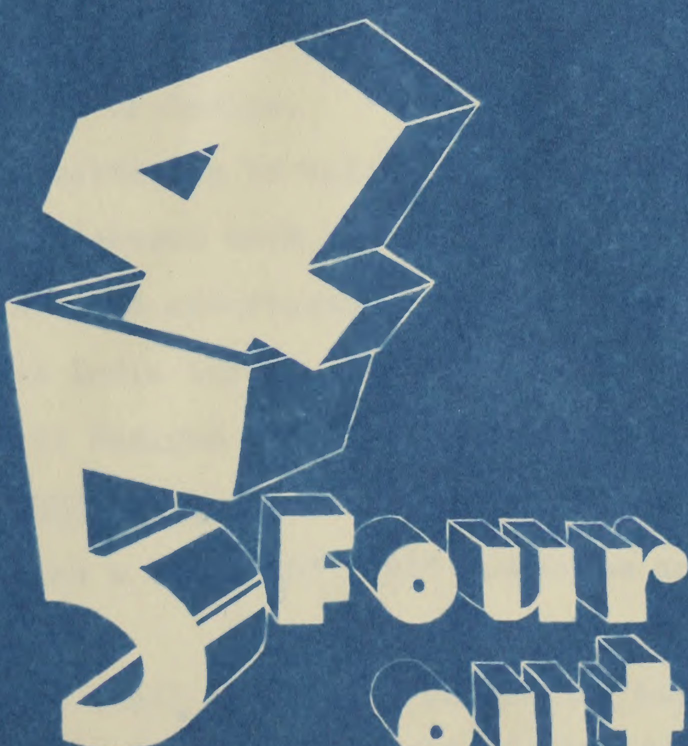
PROBLEM No. 4 - Freehand white spacing of words and sentences.

METHOD - Discuss and illustrate methods of white spacing.

PROBLEM No. 5 - Design for schoo magazine covers.



DESIGN IN COMMERCIAL ART


4
5
Four
out
of Five

LETTERING IN COMMERCIAL ART

SECOND QUARTER

PROBLEM No. 1 - Choose a style of lettering and letter the word PERSONALITY, letters 1" high and word 8" long.

PROBLEM No. 2 - Review color theories (small chart)

PROBLEM No. 3 - Paint Color Chart. (small chart)

PROBLEM No. 4 - Paint Chart of Values .(small chart)

PROBLEM No. 5 - Paint Chart of Intensities.(small chart)

PROBLEM No. 6 - Design for school magazine covers.

THIRD QUARTER

PROBLEM No. 1 - Sign painters' alphabet, free brush style.

PROBLEM No. 2 - Design an advertisement to sell Concord Grapes.

METHOD - Show an accurate illustration of a bunch of Concord Grapes with leaves attached to stem.

Plan composition of design.

Plan style of lettering to belong to style advertisement.

Draw the advertisement with pencil.

PROBLEM No. 3 - Design an advertisement in black and white of Arrow neckties. Use India ink.

PROBLEM NO. 4 - Cover designs for school magazine.

FOURTH QUARTER

PROBLEM No. 1 - Design a large 18" x 22" poster as an advertisement of Club Night.

METHOD - Make several small layouts. Choose the best one and make the drawing of the large poster from it, indicating correct values.

Trace on poster board indicating the light outline edges of values in their correct placement.

Apply color of the same value as indicated by the first which gave the true values in black and white.

PROBLEM No. 2 - Design a letterhead for the "Jack and Jill Golf Club."

PROBLEM No. 3 - Design the name of your local newspaper in modern style.

PROBLEM No. 4 - Cover designs and departmental cuts for the school magazine.

SUPPLEMENTARY MATERIAL FOR THE COMMERCIAL ART COURSE

LETTERING[1]

The best lettering has character, the elements of design having been applied to it. The first essential of good lettering is legibility. If this is sacrificed, it loses its very life.

The style and weight of lettering is governed by its use. A poster letter should be bold in form, suggesting in its character the message it conveys. For example - lettering used to advertise tractors should suggest the strength and durability of the tractor. Lettering used to advertise jewels should be just as legible as the lettering for the tractor advertisement, but in form and line possess the exquisite daintiness of jewels.

Form and spacing of letters are governed by desigh; Q, C, M, and W, being made large but because of the amount of space within the letter are placed close together for balance, while slender letters as the I and J are placed farther apart.

The following are the tests for good lettering:

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[1] Curriculum Bulletin No. 6, Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929, Page 95.

1. Is it legible?
2. Is it appropriate in style, weight and size?
3. Do the letters stand straight?
4. Are the letters well formed?
5. Are the letters well placed?
6. Do the words stand out as individual units?

ESSENTIALS OF A GOOD POSTER.[1]

The poster is one expression of art in the industrial world that has become a vital force. It has solved in a large measure the problem of mass salesmanship. Through it the message of the manufacturer and advertiser makes it appeal to the masses with irresistible strength.

As a result of the success of the poster it has developed tremendously. Today poster making is a fine art, which tests the skill of the artist, to meet the ever increasing demand of the industries.

The first essential of a good poster is a clever idea. This idea must be stated so simply, directly, and attractively, that it will catch the eye, and hold the eye long enough to deliver its message. The message must suggest more than it tells, making those who see the poster think.

A good poster is essentially a fine design. It must be planned according to the principles of design.

The eye is attracted by color, shape and line. The character of each should express the thought of the poster.

The poster, if effective, tells its message with letters of such size and shape that it may be seen and read at a glance.

Someone has said - "A good poster is one that we can read as we run."

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[1] Curriculum Bulletin No. 6, Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929, Page 96.

GRADE XI

COMMERCIAL ART

Prerequisite - Art IX and Commercial Art X.

FIRST QUARTER

PROBLEM No. 1 - Design a poster for the first school play of the year.

Use the following heading -

COME TO THE FIRST NIGHT OF - -

Plan the poster using the picture of the lighted entrance of a theater, showing rays of light within which the above lettering and the name of the play will be given.

Supply the name of the play when announced.

PROBLEM No. 2 - Design a trademark for the Comet Fur Trappers.

PROBLEM No. 3 - Design a turkish towel advertisement.
Design a turkish towel design.

PROBLEM No. 4 - Design the school magazine covers.

SECOND QUARTER.

PROBLEM No. 1 - Take the picture of Phillip Morris from the Phillip Morris cigarette advertisement and draw a pen technique sketch of same.

METHOD - Draw a pen technique sketch of the photographed picture. Strive for fine pen technique and a likeness.

PROBLEM No. 2 - Design a cover design for an Iris talcum powder jar.

PROBLEM No. 3 - Design an advertisement for the Continental Arlines.

PROBLEM NO. 4 - School magazine cover designs.

THIRD QUARTER

PROBLEM No. 1 - Lettering for Club Night exhibits.

PROBLEM No. 2 - Poster to advertise the High School Band.

PROBLEM No. 3- Design cover paper for the Hollywood Creme Bar, -(a chocolate covered candy cream bar.)

PROBLEM No. 4 - The school magazine cover designs.

FOURTH QUARTER

PROBLEM No. 1 - Design a baseball poster with the heading - "READY TO GO TO THE BAT FOR YOU."

PROBLEM No. 2 - Make a well designed radio advertisement for a local store.

PROBLEM No. 3 - The School Magazine Cover designs.

GRADE XII

COMMERCIAL ART

FIRST QUARTER

Prerequisites - Art IX, Commercial Art X and XI

PROBLEM No. 1 - A decorative well lettered map of New England, or a symbolic map of Indian tribes.

PROBLEM No. 2 - Design the cover to a modern piece of sheet music.

PROBLEM No. 3 - Make a linoleum block design for a Christmas card to be presented to the faculty and friends.

PROBLEM No. 4 - Design the school magazine covers.

SECOND QUARTER

PROBLEM No. 1 - Design a Beverly High School Football Poster. Color with poster paint.

PROBLEM No. 2 - Design an automobile tire advertisement for the Goodspeed Company.

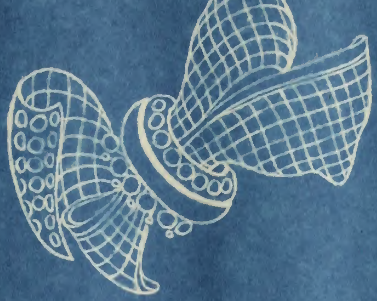
METHOD - Select and cut out a colored picture of a modern automobile where the tires are emphasized.

Paste this picture on a piece of poster board 18" x 22"

Plan design of the remaining section of the poster - lettering and large picture of the tire.

Paint with poster paint matching colors of picture.

PROBLEM No. 3 - Design school magazine covers.

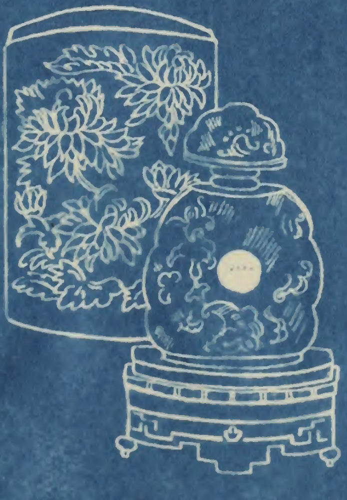


the Little Shop

of T. ATREZ

jewelers

396 York Avenue



BOKARU

THIRD QUARTER

PROBLEM No. 1-Design a cover paper for a jar of Kimberley's Peaches.

PROBLEM No. 2 - Make a magazine advertisement for BOKARU perfume. Indicate the location and size of advertising write-up.

PROBLEM No. 3 - Design a colored poster advertising the School Track Team.

PROBLEM No. 4 - School magazine cover designs.

FOURTH QUARTER

PROBLEM No. 1 - Design and paint a World's Fair Poster.

PROBLEM No. 2 - Design a Vacation Land advertisement. Color with poster paint.

PROBLEM No. 3 - School magazine cover designs.

COSTUME DESIGN

The Costume Design courses X, XI and XII aim to develop good taste in dress. Students study the human figure and its relation to clothing design, the principles of design and color as related to clothes. historic costume and its influence on modern dress. Students in costume illustration, for advertising purposes, emphasize technique.

GRADE X

Prerequisite - Art IX

FIRST QUARTER

PROBLEM No. 1 - Study of proportion and making layouts of the human figure.

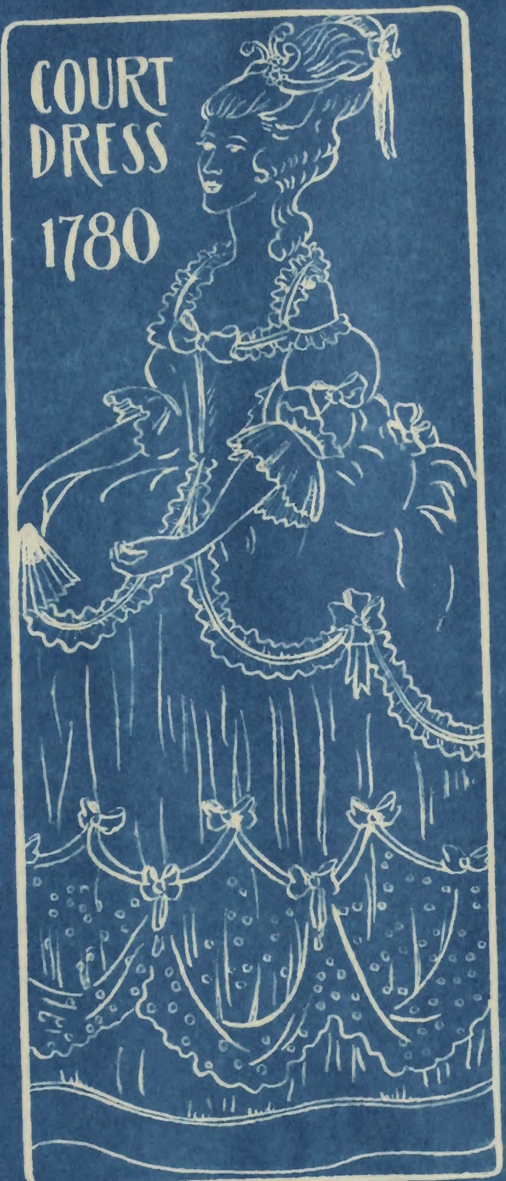
PROBLEM No. 2 - Study of line in relation to the costumed figure as used in fashion.

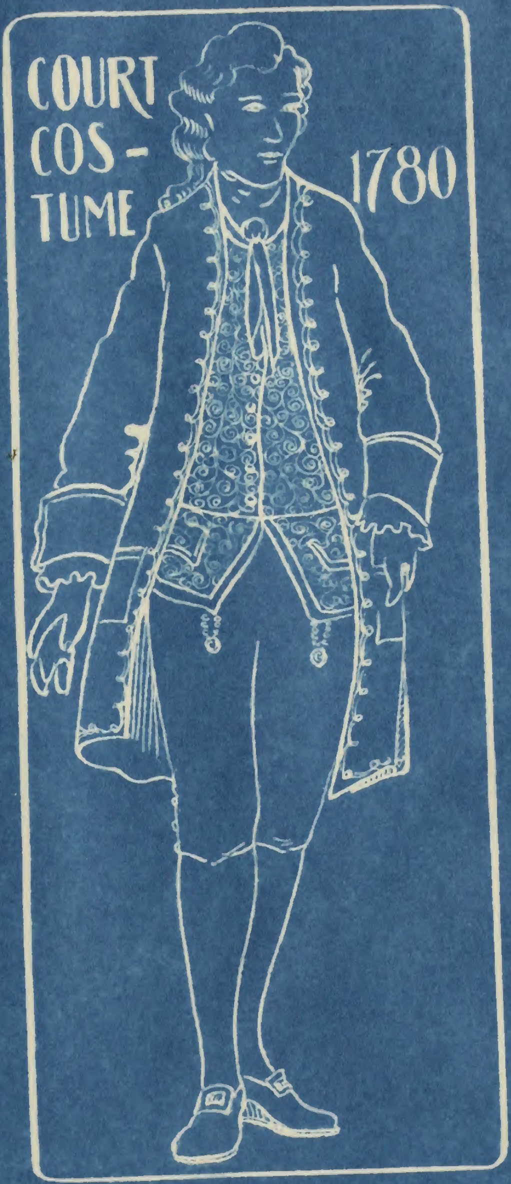
PROBLEM No. 3 - Detailed study of human figure.

PROBLEM No. 4 - Rendering different materials and textures in value.

METHOD - Practice rendering different materials and textures in values.

Collect and study examples by the best fashion illustrators.


COURT DRESS
1780


COURT COS-TUME
1780

SECOND QUARTER

PROBLEM No. 1 - Copy details of fine drawings.

PROBLEM No. 2 - Draw details of dress accessories.

PROBLEM No. 3 - Study the processes of reproduction.

PROBLEM No. 4 - Study of Historic Styles.

PROBLEM No. 5 - Study of Historic Styles.

PROBLEM No. 6 - Study of Historic Styles.

THIRD QUARTER

PROBLEM No. 1 - Use knowledge of historic costumes as a source for a modern evening gown.

PROBLEM No. 2 - Use knowledge of historic costume as a source for a modern afternoon dress.

PROBLEM No. 3 - Use knowledge of historic costume as a source for a modern hat.

PROBLEM No. 4 - Study styles in hats, shoes, gloves, etc., and trace illustrations.

PROBLEM No. 5 - Draw designs of shoes, hats, and gloves using a fashion designers technique.

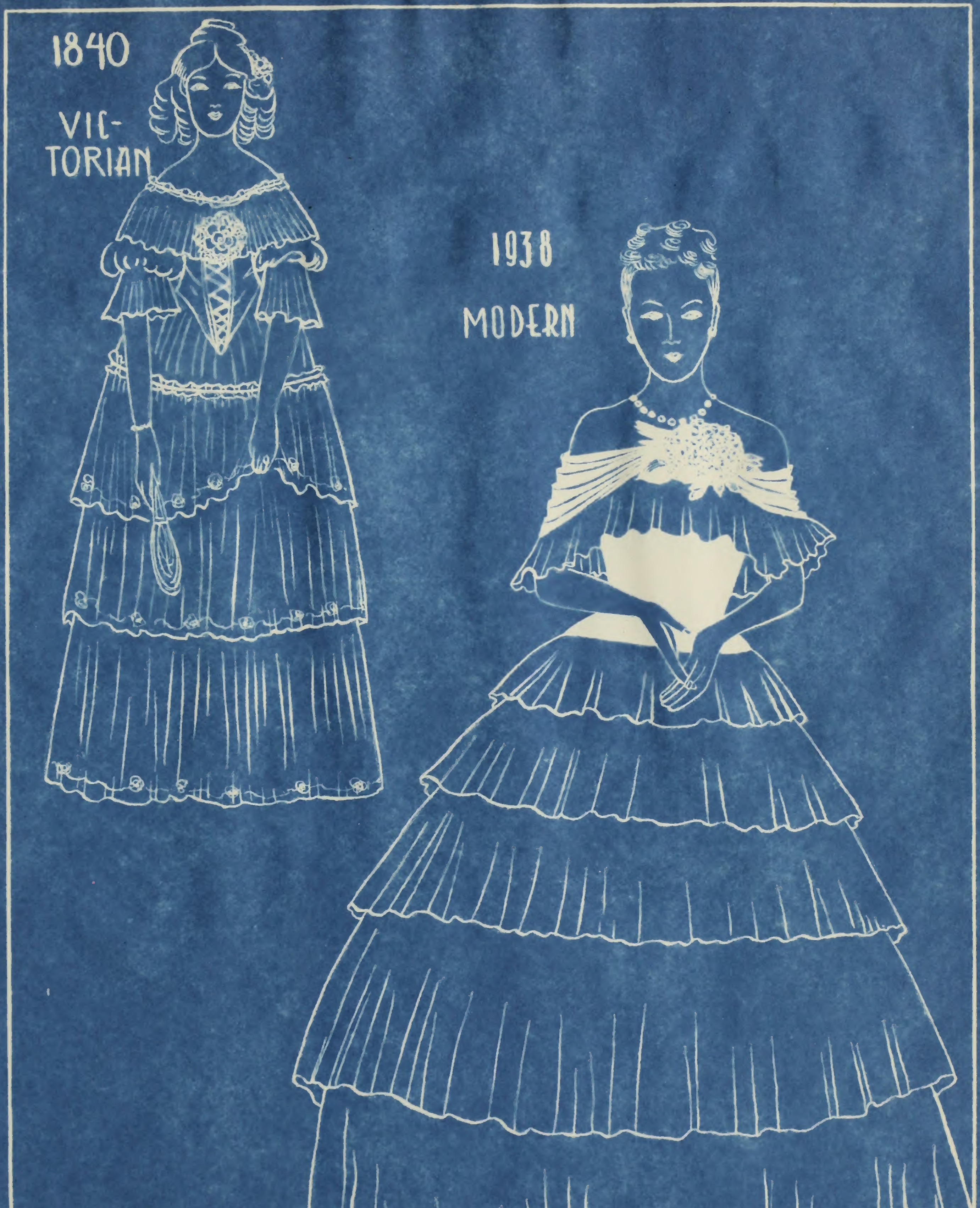
FOURTH QUARTER

PROBLEM No. 1 - Survey of color harmonies in textiles, pictures, costumes, pottery, nature, etc.

PROBLEM No. 2 - Design a stage costume and color.

PROBLEM No. 3 - Survey of psychological influence of climate, religious and social conditions, and ancestry upon dress.

PROBLEM No. 4 - Illustrate three modern costumes showing these influences.


1840
VIC-
TORIAN
1938
MODERN

GRADE XI

COSTUME DESIGN

Prerequisites - Art IX and Costume Design X.

Notebooks will be required in this class. The class must continually take notes during lecture lessons.

FIRST QUARTER

PROBLEM No1. - Survey of the general principles of design relating to beauty in clothing.

PROBLEM No. 2 - Draw a costume design to illustrate these principles.

PROBLEM No. 3 - Study the principles of dark and light in relation to clothing.

PROBLEM No. 4 - Draw an illustrative costume design with an interesting dark and light effect.

PROBLEM No. 5 - Study the principles of color in relation to clothing.

PROBLEM No. 6 - Paint an illustrative costume sketch which will show the principles of color.

SECOND QUARTER

PROBLEM No. 1 - Study the principle of line and proportion as related to clothing.

PROBLEM No. 2 - Design a dress for a slender person with sloping shoulders. Choose the occasion, and color type, and state kinds of material.

PROBLEM No. 3 - Design a street dress for a short, stout figure, stating kind of material used.

PROBLEM No. 4 - Study of neck lines of dresses - (a) for the long nect, (b) for the short, thick neck. Make illustrations.

PROBLEM NO. 5 - Study of sleeves for the long arm, and sleeves for the short arm. Make illustrations.

THIRD QUARTER

PROBLEM No. 1 - Unity in the entire costume. Lecture.

PROBLEM No. 2 - Draw modern accessories, shoes, and hose, hat, scarf, purse, gloves and boutonniere, for a blonde type person.

PROBLEM No. 3 - Draw modern accessories, shoes, and hose, hat, scarf, purse, gloves, and boutonniere for an elderly woman with white hair.

PROBLEM NO. 4 - Draw modern accessories for a brunette type of person.

FOURTH QUARTER

PROBLEM No. 1 - Designing a complete costume that one will enjoy wearing during this season.

METHOD - The accessories are to be enlarged,-separate drawings showing the details. The finished drawings must be colored. Indicate the type of person when all accessories are assembled in a small colored plate of the completed costume.

GRADE XII

COSTUME DESIGN

Prerequisites - Art IX and Costume Design X

The course of study will give an intensive study in rendering of techniques for varied purposes.

FIRST QUARTER

PROBLEM No. 1 - Discuss current styles in gowns, coats, hats, shoes and dress accessories for women, misses and children.

PROBLEM No. 2 - Review the principles of design.

PROBLEM No. 3 - Discuss the texture, weight and patterns of new materials.

PROBLEM No. 4 - Discuss the suitability of material and its utility to the dress design.

PROBLEM No. 5 - Discuss fashion illustration of all kinds.

SECOND QUARTER

PROBLEMS - Design costume sketches for newspaper advertisements, costumes of all seasons. These should all be pen and ink technique designs.

THIRD QUARTER

PROBLEMS - Design costume sketches for newspaper and magazine advertisements, costumes of all seasons. These should all be charcoal sketches finished in a professional style.

FOURTH QUARTER

PROBLEMS - Design costume sketches for fashion magazines like Harper's Bazaar and Vogue, - costumes for all seasons and climes. These should all be water color sketches finished in professional style.

Leather Carving

Leathercraft
Written in the Workshop
LEATHERCRAFT
AMATEURS
WORKING WITH LEATHER
PURSE
STRAP FOR SLIDE-IN KEY CASE

CRAFTS

FIRST QUARTER

PROBLEM No. 1 - Lecture - The history of craft work.

PROBLEM No. 2 - Lecture - The history of craft work.

PROBLEM No. 3 - The story of block-books and bookbinding.

PROBLEM No. 4 - Construct a folio book.

PROBLEM No. 5 - Lecture - Linoleum and wood block printing.

PROBLEM No. 6 - Linoleum or wood block print for an all-over pattern for a piece of cloth.

METHOD - Refer to "Hours of Leisure," Fabric Printing; the Studio Publications, Inc., 381 Fourth Avenue, N. Y.

PROBLEM No. 7 - Linoleum or wood block picture.

SECOND QUARTER

PROBLEM No. 1 - Lecture - The methods of tanning leather.

PROBLEM No. 2 - Lecture - Kinds of leather.

PROBLEM No. 3 - Lecture - Leather embossing and cutting.

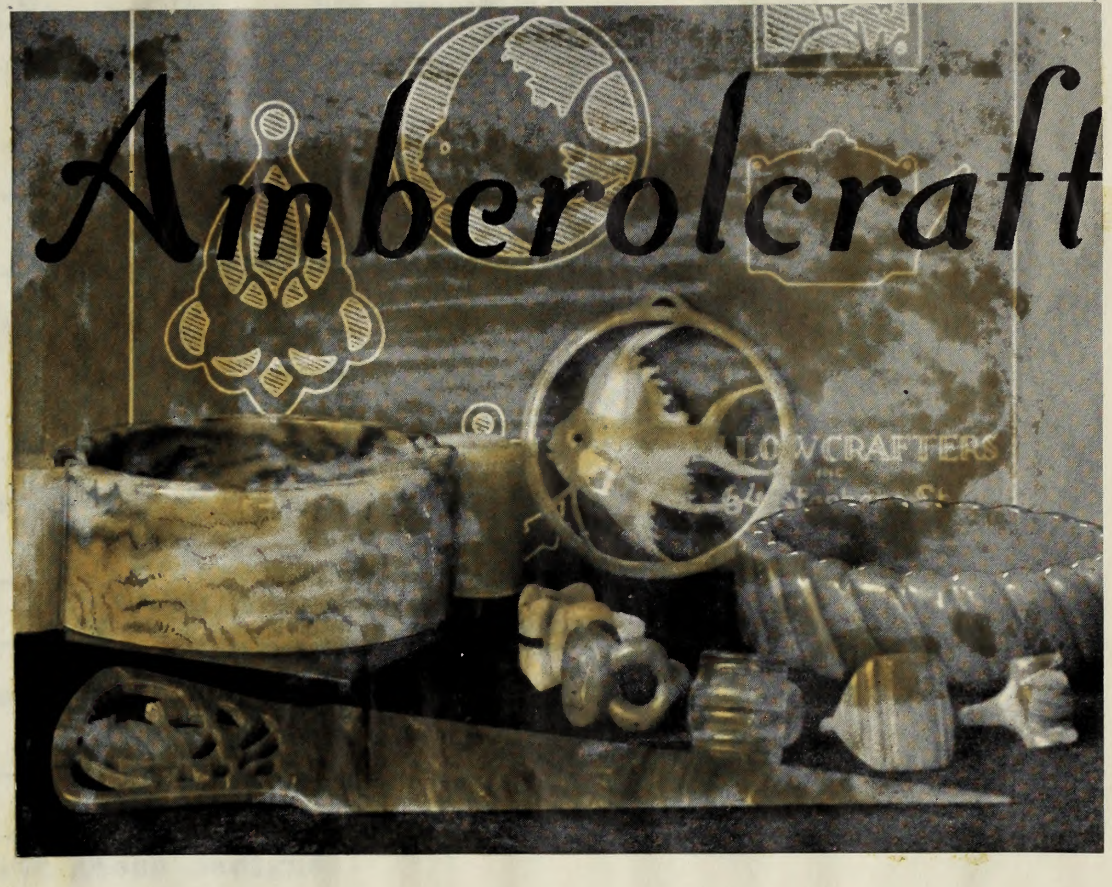
PROBLEM No. 4 - Design and make a leather bookmark, pocketbook or belt.

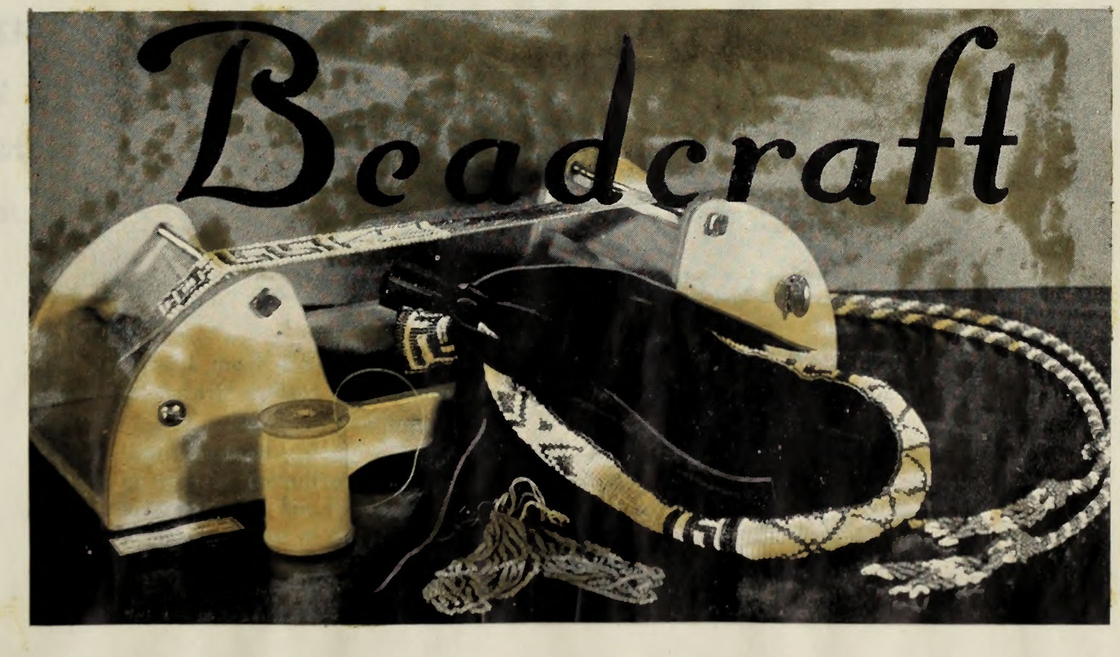
PROBLEM No. 5 - A carved wooden ring, bracelet, candlestick, box cover or book end.

THIRD QUARTER

PROBLEM No. 1 - Lecture - Batik designing.

PROBLEM No. 2 - Design and dye a batik wall hanging.


Amberolcraft
LOWCRAFTERS


Beadcraft

PROBLEM No. 3 - Make a tie-dye scarf using the dyes used for the batik.

PROBLEM No. 4 - Lecture - concerning stenciling.

METHOD - Refer to Lecture.

PROBLEM No. 5 - Stencil a handerkerchief, leather belt, or decorative paper.

FOURTH QUARTER

PROBLEM No. 1 - Lecture - Kinds of puppets and their construction.

PROBLEM No. 2 - Lecture - Marionette theaters.

PROBLEM No. 3 - Construct a simple hand control puppet, a stick control puppet or a one dimension shadowgraph puppet.

PROBLEM No. 4 - Lecture - Gesso work.

PROBLEM No. 5 - Decorate a match box cover or a small wooden chest with gesso designs.

NOTE: The advanced pupils may select problems from the following types of crafts work - Birch Craft; Cello-craft; Celluloid Etching; Braiding and Knitting; Beadcraft; Fiber Crafts; Weaving Craft, Wood Burning and Foil Transfer; Amberolcraft; Glass Etching; Art Veneer Craft, Plywood Relief; Carving; Soap Sculpture and Decorative Screen Painting.

LECTURE

STENCILING

Stencil designs in central balance: Get stencil board or heavy wrapping paper. Brush on oil or shellac.

In Japan up to a comparatively recent period, all patterned fabrics were the result either of the shuttle or the stencil. These stencil plates, usually cut in a touch, yet flexible paper made from the bark of the mulberry tree, are marvels of delicacy, strength and craftsmanship. Frequently the plate is of two layers, having hairs stretched between them to give additional strength and to avoid the use of ties as far as possible.

The design of a stencil: The design must be primarily suitable for stencilling so that when cut there are no loose or unattached parts. This means that the "ties" which is the name given to the small parts holding the design together, must be carefully considered, and not only arranged to make the design practical, but also to improve it and to appear as part of the design rather than something which has had to be added to it of necessity.

The design, whether floral or geometrical, should be simple, remembering that it has to be cut out, and if intricate shapes are introduced the cutting will be difficult.

A good simple design is always effective.

When making a floral pattern, do not attempt to imitate nature, but let it be a decorative representation of whatever form is used.

Quite an interesting method of obtaining simple geometrical patterns is also used. A piece of paper, the size required, is folded a number of times and with a pair of scissors. various shapes are cut from the folded edges.

Elaborate designs may be built up in stages by cutting several stencils for one design.

As in all decoration, the design should be suitable for the object it is to decorate.

Materials and tools required : Paper-specially prepared waterproof paper of a fairly stout substance is recommended on account of its durability and the sharp, clear edge it gives when cut.

A stenciling knife must be used. The knife must always be kept shart to give good results. It is held in a vertical position when cutting a stencil, though the Japanese, who are experts in this craft, push the knife away.

Brushes: - Hog hair brushes are most commonly used and these must have short bristles, as long bristles are inclined during the stencilling to spread out under the edges of the stencil, and destroy the sharpness of the design.

Paints:- For stencilling on paper ordinary transparent or opaque water-colors can be used, but stencilling on fabric requires to be permanent, and in most cases washable, therefore something more durable, in the nature of an oil-color is necessary. Ordinary oil colors can either be used with a special stencil medium or special colors can be purchased ready mixed for use.

Cutting stencil:- The design is carefully traced on the stencil paper which is then laid on a piece of thick glass or other hard, smooth surface and cut with the knife in an upright position. The cutting must be accurate, for if the cuts extend beyond the pattern the stencil will in all probability be spoiled.

Stencilling:- The material to be stencilled must be stretched and pinned in position on a flat surface with a sheet of blotting paper underneath to absorb any surplus moisture, particularly in the case of thin fabrics; the blotting paper will prevent the color spreading and spoiling the edges. It is necessary to stretch the material so that the whole of the stencil plate will touch the surface which is essential to obtain good results.

The paint must be of the right consistency, not too thin or it will run under the stencil, and not too thick or it will clog the material and destroy the texture. For this reason, to produce depth of color, use two coats of paint in preference to one think one. Use only a minimum quantity

of color on the brush. After dipping in the paint work of any surplus color on a piece of glass before applying it to the stencil.

The brush is held in an upright position and dabbed over the holes of the stencil. A separate brush should be used for each color and thoroughly cleaned after use.

When stencilling with several colors some prefer to cut a separate stencil for each color. This, however is not necessary except where large quantities of the pattern are to be stencilled. For ordinary purposes the parts of the design not to be stencilled with the color in use can be covered with small pieces of paper called shields. (From Various Art Crafts The Manual Arts Press, Peoria, Illinois and The Dryad Handicrafts, Leicester, England.)

Satin or sateen cannot take moist dyes. Oil paint is all right.

In stencils of two colors use two stencil boards with a common unit for placement of design.

Use fixatiff in paint for a permanent mixture. Fire proof mixtures are also good. Sugar of lead - a small amount is also good.

GRADE X

DESIGN [1]

Prerequisite - Art IX

Design is the very basis of all craft work. It is to the craftsman what the plot is to the author.

The course in Design should give the pupils a sound basis of aesthetic judgment based upon the study of the laws of order in nature.

FIRST QUARTER

PROBLEM No. 1 - Dictate the space elements and the fine elements used in Design and Representation giving the Elementary Terms. Dictate also the Modes of Order in Art.[1]

PROBLEM No. 2 - Textile Design.

METHOD - Explain the basis of textile design: The basis upon which designs for figured fabrics are chiefly constructed may be conveniently classified as follows: -

(1) Geometric basis which include the square and oblong, the diamond, triangle, hexagon, circle, etc.

(2) The drop and drop reverse arrangements.

(3) The ogee and waved line, which may be respectively employed in producing effects similar to those resulting from the second class.

(4) Various sateen arrangements.

Illustrate these types of design on the board.

The class should take illustrated notes.

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[1] Curriculum Bulletin No. 6, Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929, Page 102.

PROBLEM No. 3 - A textile design using one of these types of structure. Paint with poster paint.

PROBLEM No. 4 - Design a monogram.

SECOND QUARTER

PROBLEM No. 1 - Paper snipping, - cutting designed doilies or decorative borders or motifs to be applied to paper book covers and decorative boxes.

PROBLEM No. 2 - Design a tile using the shades of one color for color effect.

PROBLEM No. 3 - Design an Egyptian wall scroll 20" x 45". Paint with water color. Use white wrapping paper.

A Japanese, Chinese or Peasant wall scroll would also be quite appropriate.

PROBLEM No. 4 - Design a map of Odysseus Travels or a Decorative map of the New England shore.

THIRD QUARTER

PROBLEM No. 1 - Study Persian Design.

PROBLEM No. 2 - Design a small manuscript decorated with Persian manuscript designs.

PROBLEM No. 3 - Illuminate the manuscript with gold paint and paint with water color.

PROBLEM No. 4 - Design the class pin for the tenth grade class.

FOURTH QUARTER

PROBLEM No. 1-Study the rhythm, line and proportion in Japanese prints.

PROBLEM No. 2 - Create a Japanese print with the expression of movement, - waves, the flight of birds.

PROBLEM No. 3 - Color the Japanese print design.

PROBLEM No. 4 - Design a stencil from one of the small design motifs in the Japanese print.

Paint an all-over pattern with the stencil on a scarf or decorative paper.

The advanced students may accomplish the following problems -

Design a diamond hexagonal structure wall paper for a sunny or dark, hall, living room or dining room.

Paint.

DESIGN[1]

SUPPLEMENTARY MATERIAL FOR THE DESIGN COURSE OF STUDY.

Design is the orderly expression of an idea producing beauty of line, proportion, balance and rhythm peculiarly appropriate to the idea itself.

It is the basis of all good art.

Design in its fullest sense serves two purposes - It produces an article of use, and at the same time strives to make it as beautiful as possible. Whenever the design of an object interfers with its use, it is poor design.

"Each of these functions of use and beauty are subject to these three principles -

The three important principles governing the use of and object are :

1. The form of an object should reveal and emphasize its purpose.

2. The material composing an object should be that most suitable for its use. The peculiarities and characteristics of this material should never masquerade as another material.

3. The construction should be honest, clearly showing without disguise the tool and process."

"Beauty", - under this we must consider -

1. Proportion, or the relation of size.
2. Contour, or the relation of shapes.
3. Tone, or the relation of neutral values and of colors.

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[1] Curriculum Bulletin No. 6, Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929, Page 102.

1. Proportion means a rotation betwëen the measures of different parts of a whole. The approximate ratio of two parts to three is one of wide useful application.

2. Contour, or the relation of shapes, shows us the form of an object. It is its defining outline or visible edge. The horizontal line suggests repose - silence.

The vertical line gives the impression of life, vigor, and uplift. Curves suggest motion.

3. Tone refers to the neutral values, or to colors of an object. A sensitive appreciation of tone comes with study and experiment.

There are two kinds of design - abstract and conventional. Abstract design depends upon the arrangement of lines and areas without resembling natural forms.

Conventional design uses natural forms adapted by revision and the elimination of details to the needs at the specific object. Both abstract and conventional design are governed by definite rules of order. The most important of these harmony, balance, rhythm, dominance, and subordination.

1. HARMONY.

Harmony is felt when two or more forms have some characteristic in common. The more this common element increases, the greater the harmony.

2. BALANCE

Balance means an opposition of equal forces. There are two kinds of balance - obvious and occult. Obvious means a balance which ic clearly evident. Occult, that balance, the cause of which is not clear, although a sense of repose is clearly felt.

3. DOMINANCE.

This means that every design must possess a leading dominating idea usually shown, in a dominant shape and size of some part of the particular object or decoration.

TEACHING DESIGN.[1]

Design is most successfully taught to children when the need for decoration is felt by them in working out a specific design.

In teaching design to children it is first necessary to get clearly before them the meaning of design. Some discussion of design as found in the room will help them to see the difference in a picture, which is the likeness of an object, and a design which exists purely to decorate, merely suggesting the form and color of an object; for example, design as found in clothing.

It is important that children think of the value of design to the world, especially of the relation of design to industry.

(In the study of manufacturing in the upper grades design is an interesting problem).

The following statement suggests a simplified method of teaching some of the basic rules of design. When illustrated by sketches on the board and by cut paper stencils they become quite clear to the average child.

1. Good design has variety or difference in color and shape and forms.

2. Good design has dominance in shape and size of forms in color and in feeling.

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[1] Curriculum Bulletin No. 6 Art Education, Raleigh Public Schools, Raleigh, North Carolina, 1929 Pages 104-5

(a) Shapes are grouped around one larger and more important shape. They are different in size and shape.

(b) One color should stand out as though principle hue,

(c) To express a feeling of movement, as in waves, curve lines should dominate. Any other feeling may be expressed by emphasis on the quality producing that emotion.

3. Shapes should fit together (unity) one seeming to be built about the other.

In judging design try to take some part away and see if it looks just as well without that part.

Good design is complete - one part taken away or one part added will ruin its beauty.

CONVENTIONAL DESIGN

The colors and shapes spoken of above may be similar to real objects. They are most attractive when the natural form of the object is merely suggested.

ABSTRACT DESIGN

Squares, circles, triangles, and so on, may be arranged to form interesting decorative units.

REFERENCE FOR ILLUSTRATIONS

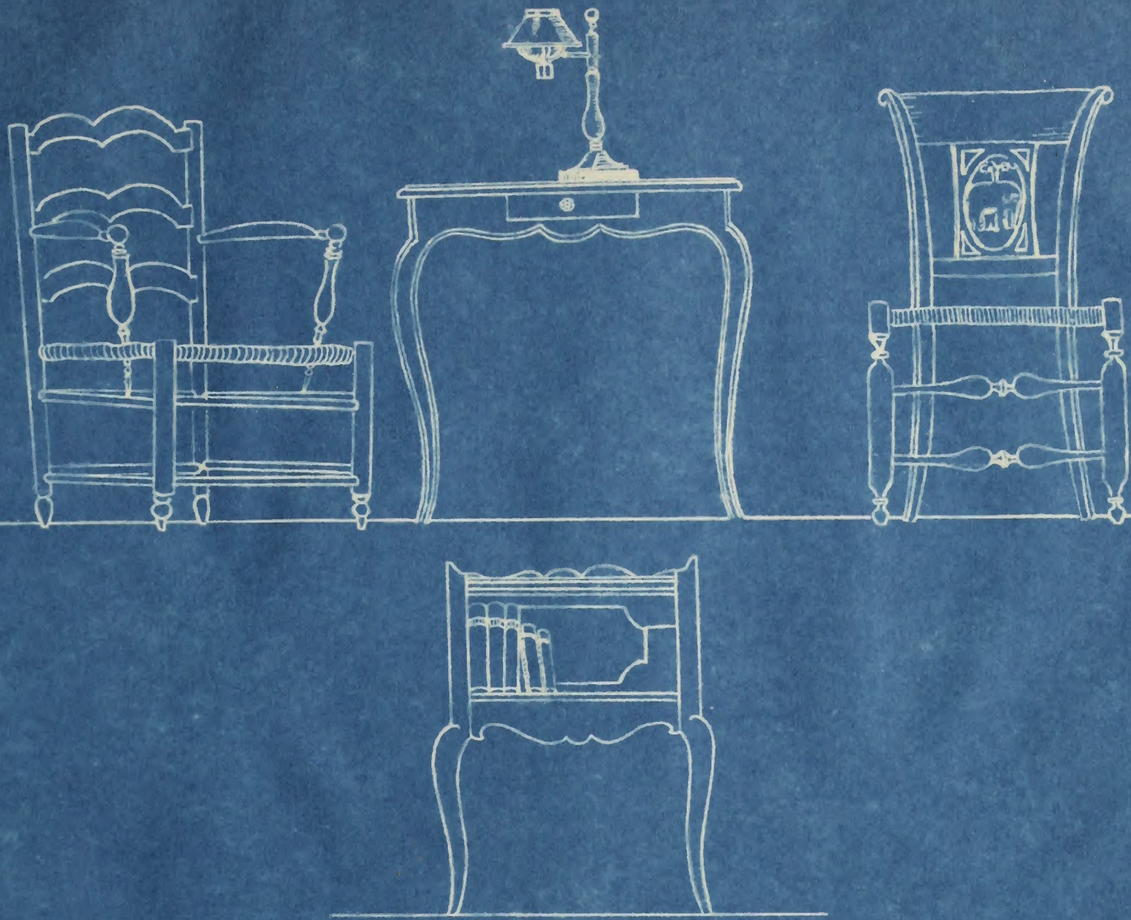
Practical Drawing Books.

Art Education Edition, Book 4, 5, 6.

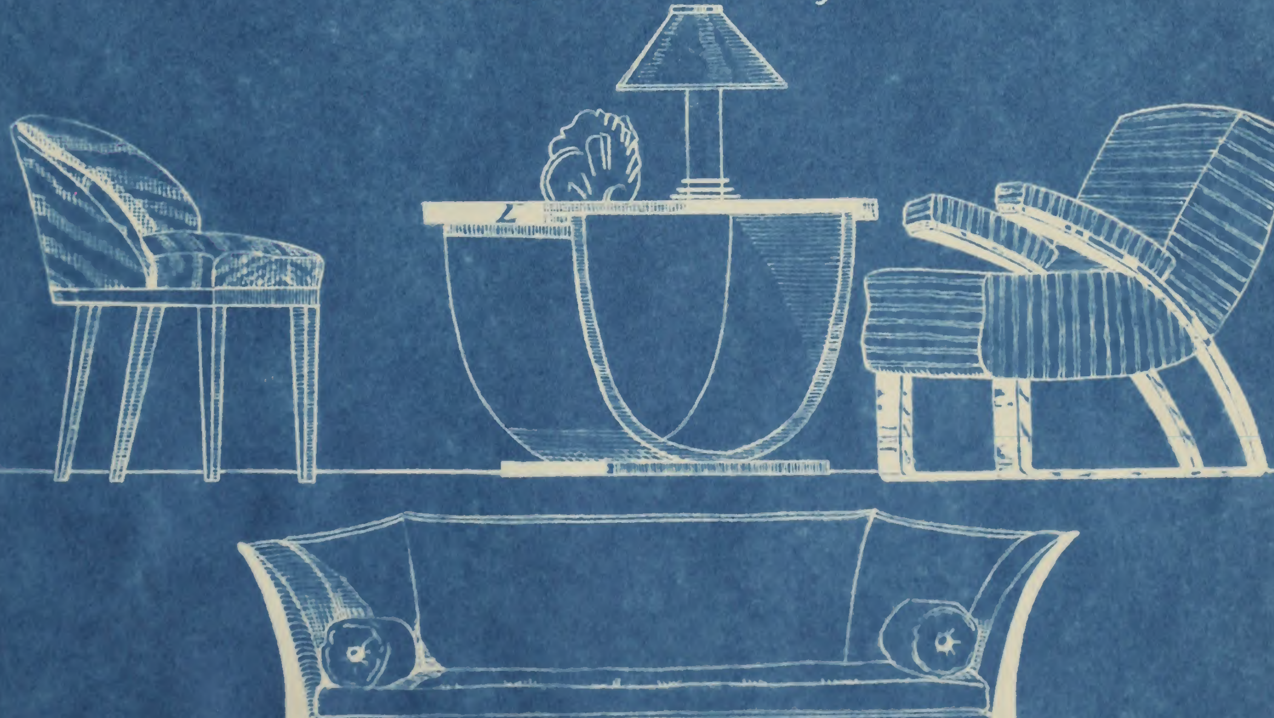
Brown: Applied Drawing.

Loemos: Applied Art.

French Provincial Furniture



The Modernistic Style



GRADE XI

DESIGN

Prerequisites - Art IX and Design X

FIRST QUARTER

PROBLEM No. 1 - Design a decorative perfume bottle.

PROBLEM No. 2 - Design an old fashioned sampler on graph paper. Letter the poem or motto.

SECOND QUARTER

PROBLEM No. 1 - Design the cover to a notebook in which will be placed collections of design illustrations found in magazines and newspapers. The notebook will be kept in well designed order.

PROBLEM No. 2 - Mount illustrations collected and label.

PROBLEM No. 3 - Dictate an illustrated lecture concerning furniture through the ages.

PROBLEM No. 4 - Continuance of study of furniture design in lecture form.

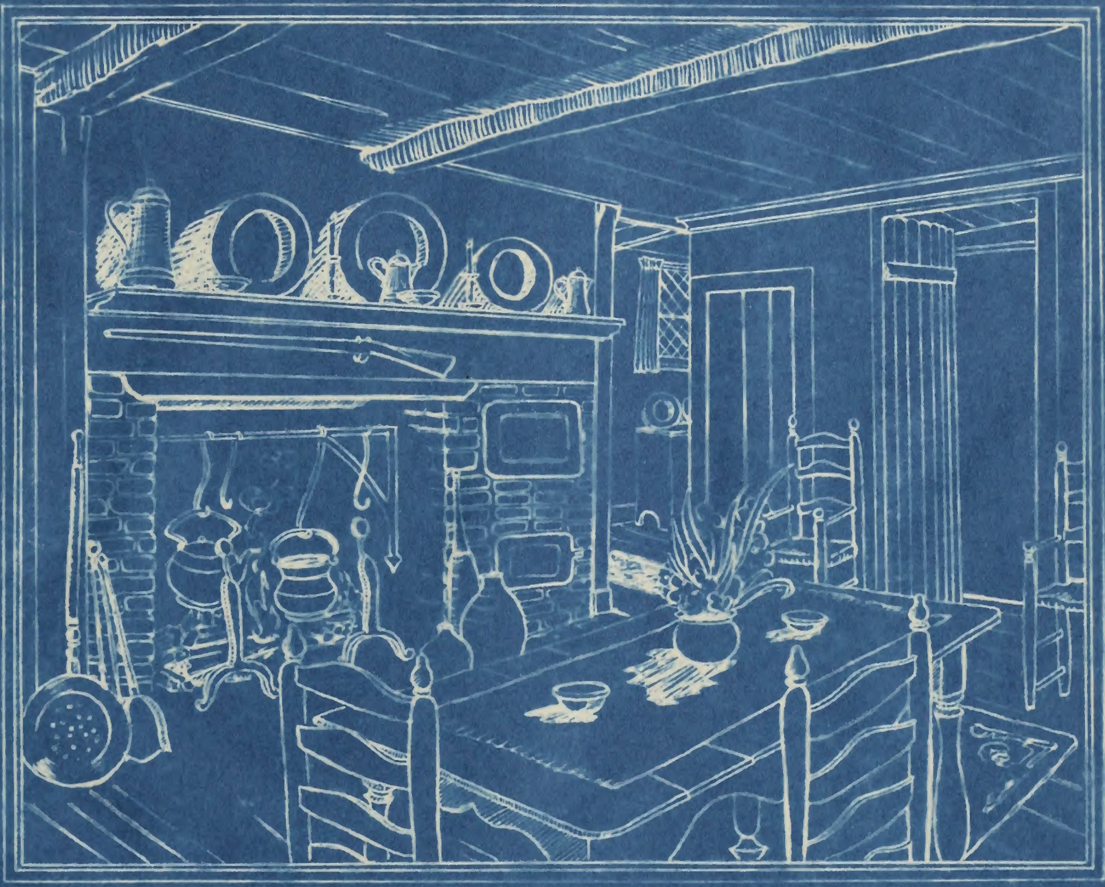
PROBLEM No. 5 - Furniture design.

THIRD QUARTER

PROBLEM No. 1 - Copy designs of period furniture.

METHOD - Draw with pencil and finish with India ink using a clear pen technique.

PROBLEM No. 2 - Study well known styles of dishes and chinaware through the ages.



INTERIOR DECORATION

METHOD - Illustrated lecture. The class will take illustrated notes.

PROBLEM No. 3 - Design and paint a dinner plate.

FOURTH QUARTER

PROBLEM No. 1 - Study Persian Rug designs from colored plates of Persian Rugs.

PROBLEM No. 2 - Draw and paint a small corner of a Persian rug showing corner design and border motifs.

PROBLEM No. 3 - Design a modern room - a perspective sketch.

METHOD - Study illustrations of well planned rooms.

Illustrate perspective of a room on the board.

Illustrate the perspective of furniture placed in the room.

Indicate vanishing points.

Tell class to notice the plan of wall spaces before placing furniture and pictures.

Study curtains and rugs as well as furniture for the kind of room illustrated.

GRADE X

HISTORY OF ARCHITECTURE

This course of study is a pre-requisite course for Architectural Design in the XI and XII grades.

The Course should be given by means of class lectures.

The Class should keep very clearly written notes.

Quarterly examinations will be given.

FIRST QUARTER

PROBLEM No. 1 - The main features of Architectural Development.

METHOD - Study the lintel, column, arch, dome, vault and truss.

PROBLEM No. 2 - Foundational Styles of Architecture.

METHOD - Studya. Western: Romanesque, Gothic, Renaissance, 19th and 20th Centuries, or Eclectic Architecture.

b. Eastern: Mohammedan (1) Moorish (2) Mosques and palaces of North Africa; Brahman and Buddhist (India); Chinese and Japanese.

c. Egyptian: Persia, Lycia, Chaldea and Assyria.

d. Ancient.

e. Greek: the Acropolis; Parthenon; Motives of the Greeks; Callicrates, and Ictinus - Pheidias; Building material; Patina, Typical Greek Styles; the Doric Order (Column); the Ionic Order (Column); Combination of Forms, - Outline of Greek Art (1) the archaic period, (2) the transitional period, (3) Periclean period, (4) Alexandrian period, (5) Roman period.

f. Rome.

g. Greek Art in Domestic Buildings.

PROBLEM No. 3 - Earliest Art - Terramara and Etruscan.

PROBLEM No. 4 - Roman Architedture and Manufactured Materials.

METHOD - Study - Villas; Baths; Collosseum and Arches; The Roman Forum, Parthenon; Hadrian's Tomb; Public Works; Mosaics; Theatres; Amphitheatre, the Collosseum; Circus Maximus; Development of Columns and the Dome; Groining.

PROBLEM NO. 5 - The Early Christian Architecture.

METHOD - Study - Basilica Church; Byzantino Architecture; Windows; Russian and Arabian or Eastern Architecture; Persia; Turkey; Bazaars.

SECOND QUARTER

PROBLEM No. 1 - Western Architecture.

METHOD - Study - a. Lombard-Romanesque, Italian Romanesque; Campaniles, Tuscan Architecture; Western Romanesque; Cathedrals.

PROBLEM No. 2 - English Architecture.

METHOD - Study - a. Romanesque-Norman (or Norman Catholic) (1) The effects of the Normans traveling in Sicily, France and England on the Norman Architecture.

b. Norman Buildings
e. Groining
d. Castles
e. Gothic
f. Buttresses.

1. Early Pointed (Early French, Early English, or so-called Lancet Period in England)

2. Middle-Pointed Period (called Rayonant in France and Decorated or Geometric in England).

3. Florid Gothic (called Flamboyant in France and Perpendicular in England.)

g. French Gothic.

h. Palaces.

PROBLEM No. 3 - Spanish Gothic.

PROBLEM NO. 4 - Germany, the Lowlands, and Portugal.

PROBLEM No. 5 - Gothic in Italy.

THIRD QUARTER

PROBLEM No. 1 - Renaissance Architecture - Italy.

METHOD - Study - a. Early Renaissance (1400-1490), or Quattrocento (1400's) is graceful, with free use of Roman Patterns.

b. High Renaissance, Classic (1490-1550), or Cinquicento (1500's), shows a loss in freedom of design, with classic detail and increased stateliness.

c. Baroque (1500-1600) or Seicento (1600's) has colossal orders, with engaged columns and scanty but heavy decoration.

d. Decline (1600 - 1700) - Poverty of invention, vulgar sham, and huge florid scrolls.

e. Classic Revival (beginning 1800).

PROBLEM No. 2 - French Renaissance Architecture.

METHOD - Study - a. Valois Period - Renaissance Proper (1483 - 1589)

a. Transition - Charles VIII to Louis Xii (1483 - 1515) and early years of Francis I.

b. Early Renaissance - Francis I (1520 - 1547) Grace and beauty of detail; bore classical forms.

c. Advanced Renaissance - Henry II and Catherine de Medici period, from 1547 to Henry III, 1589, with the help of the sculptor Jean Goujon. Struggle between classicism and caprice.

B. Bourbon or Classic Period (1589 - 1715)

a. Classic orders, florid and heavy.

b. Louis XIII and XIV, more classic.

C. Decline or Rococo Period (17th and 18th Centuries)

PROBLEM No 3 - Renaissance Architecture in Spain.

PROBLEM No. 4 - Renaissance Architecture in Great Gritain.

PROBLEM No. 5 - Renaissance Architecture in other countries.

a. Germany. b. Belgium. c. Holland. d. Denmark. e. Sweden.

FOURTH QUARTER

PROBLEM No. 1 - 18th Century Architecture in England.

PROBLEM No. 2 - Modern Architecture in the 19th Century.

PROBLEM No. 3 - Queen Anne Style.

PROBLEM No. 4 - 19th Century France.

PROBLEM NO. 5 - Architecture in America.

PROBLEM No. 6 - Modern Architectural Trends.

c. Advanced Renaissance - Henry II and Catherine de Medici period, from 1547 to Henry III, 1589, with the help of the sculptor Jean Goujon. Struggle between classicism and caprice.

2. Bourbon or Classic Period (1589 - 1715)

a. Classic orders, florid and heavy.

b. Louis XIII and XIV, more classic.

3. Decline or Rococo Period (17th and 18th Centuries)

PROBLEM No 3 - Renaissance Architecture in Spain.

PROBLEM No. 4 - Renaissance Architecture in Great Britain.

PROBLEM No. 5 - Renaissance Architecture in other countries.

a. Germany. b. Belgium. c. Holland. d. Denmark.
e. Sweden.

FOURTH QUARTER

PROBLEM No. 1 - 18th Century Architecture in England.

PROBLEM No. 2 - Modern Architecture in the 19th Century.

PROBLEM No. 3 - Queen Anne Style.

PROBLEM No. 4 - 19th Century France.

PROBLEM NO. 5 - Architecture in America.

PROBLEM No. 6 - Modern Architectural Trends.

GRADE XI

ILLUSTRATION

Prerequisite - Art IX

FIRST QUARTER

PROBLEM No. 1 - The scope of cartooning.

METHOD - Explain cartooning; the cartoonist's subjects are the foibles of humanity, amusing, serious or tragic as they may be.

A cartoon tells a story in two ways; in the caption which gives in words the artist's idea; and in the picture which illustrates it.

The technique for drawing a single figure is the same as that for drawing a whole picture. First, one gets the idea, to be expressed, then blocks out the large outlines, then adds gestures, then details of facial expression and of clothing, always using the fewest possible lines and the smallest possible number of details to give the desired impression.

Explain the varied types of techniques used in cartooning.

Explain the uses of cartoons. Illustrate on the board.

PROBLEM No. 2 - Design your signature to interestingly decorate the corner of a cartoon page.

PROBLEM No. 3 - Practice drawing fellow students in many varied activities.

PROBLEM NO. 4 - Select the best sketch and place in a simple cartooned background with a caption. Ink for use as illustration in school magazine.

SECOND QUARTER

PROBLEM No. 1 - Study the composition of famous paintings.

METHOD - Select pictures which show the different line structures of compositions such as triangular, S, shape, etc.

Illustrate the line composition of each on the blackboard.

Illustrate the value composition of each on the blackboard.

PROBLEM No. 2 - Direct class to select one of the pictures painted by a famous artist and analyze the outstanding compositional lines and values.

PROBLEM No. 3 - Draw a charcoal drawing of a simply designed picture by a well known artist. Draw free hand.

PROBLEM No. 4 - Draw a composition with solid block values for the school magazine.

THIRD QUARTER

PROBLEM No. 1 - Draw Square Root Rectangles.

PROBLEM No. 2 - Indicate the use of these rectangles to famous pictures such as Battersea Bridge by Whistler.

PROBLEM No. 3 - Draw an illustration using the Root Rectangles.

PROBLEM No. 4 - Draw an illustration for the school magazine applying the rules of compositions already learned.

FOURTH QUARTER

PROBLEM No. 1 - Study radiating lines in perspective.

PROBLEM No. 2 - Illustrate radiating lines and well placed values in a charcoal picture.

PROBLEM No. 3 - Take picture of Problem No. 2 and paint, painting colors the same value as those in the original picture.

PROBLEM No. 4 - Draw an illustration for the school magazine.

GRADE XII

ILLUSTRATION

Prerequisites - Art IX and Illustration XI

FIRST QUARTER

PROBLEM No. 1 - Review the laws of composition already learned, (i.e.), - Line Structure, Value Distribution, Root Rectangles, and Radiating Lines.

PROBLEM No. 2 - Study the different textures achieved in pen technique. Draw a pen technique texture chart.

PROBLEM No. 3 - Study the combination of space line, and form in illustration.

PROBLEM No. 4 - Draw an illustration of the interior of a house, geometrically, showing space, line and form. Draw with pencil.

SECOND QUARTER

PROBLEM No. 1 - Draw a landscape including the human figure illustrating the geometric laws of space, line and form. Draw with charcoal.

PROBLEM NO. 2 - Teach the uses of color.

METHOD - Explain the four ways in which three types of artists use color.

(1) One way makes color a means to describing superficial appearance - facts of subject, the color, along with the other elements, in effect serving to create an illusion of, or proxy for, the thing depicted.

(2) A second way features color for its inherent emotional appeal. Light warm colors feel gay, dark heavy colors feel somber, ominous.

(3) A third way of using color is for its decorative or pattern value.

(4) The fourth way is the creative architectural method of the original architectural artist. This way alone satisfies the deeper cravings for the overtones and undertones of color experience.

PROBLEM NO. 3 - Plan a large sized picture for water color or oil painting for the purpose of applying one of the four ways of using color.

FOURTH QUARTER

PROBLEM No. 1 - Paint the pictorial composition finished during the last of the third quarter.

PROBLEM No. 2 - Design illustrations for the school magazine for June.

GRADE XII

Prerequisite - Mechanical Drawind IX,X and XI

MACHINE DESIGN

FIRST QUARTER

PROBLEM No. 1 - Drawings of square and hexagonal bolt heads and nuts.

PROBLEM No. 2 - Chart of Dimensions of U. S. Bolt Heads and Nuts.

PROBLEM No. 3 - Drawings of Hexagonal Square, Button, Countersunk, Fillister (flat), and Fillister (oval), Cap Screws.

PROBLEM No. 4 - Table Showing Dimensions of Cap Screws.

PROBLEM No. 5 - Drawings of Square set screws with Flat, Pivot and Cup Points, and of Round Set Screws with Round and Cone Points.

PROBLEM No. 6 - Conventional drawings of U. S. Standard Square and Hexagonal Bolts and Nuts.

SECOND QUARTER

PROBLEM No. 1 - Tool Post.

METHOD - Machines are made by putting together a number of different parts. The tool post shows an assembly of five separate pieces. This is only one small part of a lathe which would require many working drawings for its complete construction.

Make complete working drawings of each part of the Tool Post.

The placing of the various views of each part should be carefully planned before starting the drawing.

Leave enough space around each working drawing so that it will stand out clearly, distinctly and completely, with all dimensions, title, etc.

Notes should be added to indicate the scale, number of threads, etc.

Sectional views also help to make certain parts more easily understood.

PROBLEM No. 2 - Assembled Tool Post.

METHOD - Draw the five parts put together, or assembled. Have the long edges of the paper vertical. Draw only the visible outline of each part without dimensions.

PROBLEM No. 3 - Bench Grinder.

METHOD - Refer to methods of problem 1 of the second quarter.

PROBLEM No. 4 - Assembled Bench Grinder.

METHOD - Make a drawing showing the front and end view of the Grinder with all parts assembled or put together. The size of each piece can be measured directly from the detail drawings with the dividers. This picture should not show any invisible outlines or dimensions.

THIRD QUARTER

PROBLEM No. 1 - Draw the involute to a given circle.

PROBLEM No. 2 - If H is the center of the wheel A draw the addendum and dedendum circle.

PROBLEM No. 3 - Illustrate the generation of a Hypocycloidal Curve i.e., - cycloidal curve, epicycloidal curve and hypocycloidal curve.

PROBLEM No. 4 - Dictate notes concerning Annular Gears, Bevel Gears, Spiral Bevel Gears. Skew Bevel Gears and Involute Bevel Miter Gears.

PROBLEM No. 5 - Give out hectograph copies of the following tablesfor the class to study:

Cutters for Cutting Involute Gear Teeth.
Grant's Cycloidal Odontograph.
Grant's Involute Odontograph.
Rules and Formulas for Dimensions of Spur Gears.
Symbols Used in Spur Gear Calculations.
Rules and Formulas for Internal Spur Gears.
Rules and Formulas for Calculating Bevel Gears with Shafts at Right Angles.
Symbols Used in Bevel Gear Calculations.
Rules and Formulas for Calculating Miter-Bevel Gears.
Symbols Used in Worm Gear Calculations.
Rules and Formulas for Worm Gearing.

METHODS - Explain use of tables.

Tell class to study.

PROBLEM No. 6 - Construct a Cycloidal Gear Tooth.

FOURTH QUARTER

PROBLEM No. 1 - Draw a Simple Plate Cam.

PROBLEM No. 2 - Draw a Complicated Plate Cam.

SUPPLEMENTARY MATERIAL FOR THE MACHINE DESIGN COURSE OF STUDY

DESIGNING OF MACHINERY[1]

The designing of machinery is the first step in its manufacture, after the idea has taken form in the inventor's mind. Therefore the drafting instruction which makes it possible to put ideas in shape on paper has a prominent part in this department.

The machinery designer or draftsman must know generally all the steps in its manufacture, or often he will find his designs in conflict with the work of the shops. A combination of drawing instruction and shop practice is of much value in giving a proper fundamental knowledge of this work, and this system is followed in the course af machinery given for the High School.

The procedure in the manufacture of machinery is briefly as follows: - The draftsman prepares the drawings and specifications, copies of which, usually in the form of blueprints, go to the pattern shop, machine shop, forge or other department where the necessary material is handled. There the foreman distributes these drawings to the workmen who in his estimation are best able to do the work. After the various parts are finished, they are assembled into the desired machine, which, after proper tests have been applied, is then ready for delivery to the customer.

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[1] Handbook of Vocational Course, Board of Education, Buffalo, N.Y.

It will readily be seen that any undetected error in the drawings will render useless, or at least delay, the subsequent work of the shops, which often has to be completed within a stipulated time. Before drawings are sent to the shops they are carefully inspected for possible errors. Responsible, dependable men are in good demand in the machinery field.

The tools used are those of the general draftsman; namely: drawing instruments of various kinds.

SHOP TERMS

BORE -"In all cases whether a round hole is to be machined and the hole is either so large that a twist drill cannot be used or it is impossible to give the desired finish to the hole as is impossible in the inevitably rough work of the twist drill, the work is done on a lathe by means of a boring tool." The note, 6" bore, refers to such an operation, the dimension indicating the diameter of the hole.

COUNTER BORE - This operation is done with a boring tool in much the same way as ordinary boring. It is often desirable to have the outer portion of a round hole larger in diameter than the remainder of the hole to admit some other piece to give a better bearing surface around the periferv. A counter bore is similar to a counter sink except that it is cylindrical, instead of conical.

DRILL - Round holes up to 1¼" to 1½" in diameter are ordinarily made with twist drills. Drilling operations are done conveniently and quickly on any of the types of drill presses, although the operation can be done on a lathe. The diameter and operation are indicated by a note, thus,- 5/8" Drill.

FILLET - Experience has shown that breaks are likely to occur in sharp corners of metal parts of machines. These corners apparently are the starting point of breaks. This fact is one reason why all corners found on castings are slightly rounded. Patterns with fillets are most easily removed from the mold and result in smoother, more even corners. Fillets are usually made with a radius from 1/8" to 3/8".

FINISH - To show that any surface of a piece of machinery is to be finished or machined on a lathe, shaper, or planer, a character similar to an italic letter "f" is used. If this character is omitted on a drawing, the workman understands that a certain surface of a casting or forging is to be left rough.

GRIND - Pieces of machinery that require great accuracy and precision are ground on special grinding machines. This work is often done to within one thousandth, and even one ten thousandth of an inch. Reamers, mandrels, pistons, are a few examples of grinding jobs.

REAM - In order to make a drilled hole smooth and bring it to the exact size within the prescribed limits, a

tool known as a reamer is turned through the hole. This tool resembling a drill in general shape has flutes and cutting edges running lengthwise and is slightly tapered.

TAP - A tap is a tool somewhat similar to a bolt, that is used in cutting threads in a drilled hole or in nuts. Such a tool is made first threading a rod of steel as though it were to be made into a bolt and then grooves are cut lengthwise through these threads, ordinarily four grooves are cut, giving four rows of cutting edges. The grooves also furnish space in which chips may collect.

In making a tapped hole, a drill is first used to make a hole of the required size of the root diameter of the threaded bolt which the tapped hole is to receive. This drill is called a tapping drill. The tap is then used to cut the threads on the inside of the drilled hole.[1]

SUGGESTIONS FOR CHECKING DRAWINGS.

In checking, see that -

1. The most illustrative views are selected and correctly projected.

2. All conventional lines are made according to adopted standards and graded to show contrast.

3. Center lines for all circles and large arcs are drawn.

4. Necessary dimensions are given, requiring no calculations by the workman.

5. Related dimensions appear on the same view, if possible.

6. "Detail" and "over all" dimensions check not only with the scale but also by addition.

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[1] Machine drawing for Intermediate and High Schools, Detroit, Michigan, 1923.

7. Dimension and notes are not repeated.

8. Arrowheads , figures and lettering are made uniform and neat.

9. All finished surfaces are marked.

10. All sections and notes which will add to the clearness of the drawing are properly made.

11. Where accuracy demands, all dimensions are "tied up" to center lines or finished surfaces.

12. The assembly checks for clearance of moving parts, and also that the various parts function properly.

13. All holes for accurate fits are made standard; and parts fitting thus are made under or over size as the case demands.

OCCUPATIONAL INFORMATION CONCERNING MACHINE DESIGN[1]

Machine drafting is concerned with the representation of machinery in its various forms. Machine design runs from the general to the particular; from assembly drawing, or complete design, to the designing and detailing of single parts. Each part must be completely portrayed and this involves five features: shape, size, scale, material, and finish. Shape may be shown in orthographic, isometric, or cabinet projection, or in perspective. The most satisfactory method is orthographic, because it represents the method as it really is - undistorted - all angles having their true value. The three other methods have the advantage of showing length, width, and thickness in one view, which makes them easier of comprehension to the untrained worker, but difficult to draw when the object is complicated. Sizes or dimensions are essential for the making of an object. The scale is necessary to adapt the drawing to the size of the paper. Materials are represented either naturalistically, as for example wood, brick, stone, concrete, or glass; or conventionally, for example cast iron, steel, brass, or babbitt. Sections are used to help portray the interior of

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[1] Exploratory Mechanical Drafting - Industrial Arts Bulletin No. 1, Los Angeles, City High School District, 1928.

an object, or to show the method of construction, or the method of assembling the various parts. Finish marks are useful to the pattern maker who learns where waste material must be supplied, and useful to the machinist who learns where and how surfaces must be finished.

Machine drafting has been greatly changed and improved in the last generation. The trend has been toward conventional methods of representation rather than elaborate drawings of the object laboriously and accurately executed. The drawing of threads and of gears, for example, which consumed considerable time in the early days of industry, is now done by conventional symbols derived by a process of evolution from the more elaborate drawings of the past. This evolution should be explained as it possesses considerable interest and points to the man, as well, that time is as vital a factor in the production of drawings as it is in other technical work.

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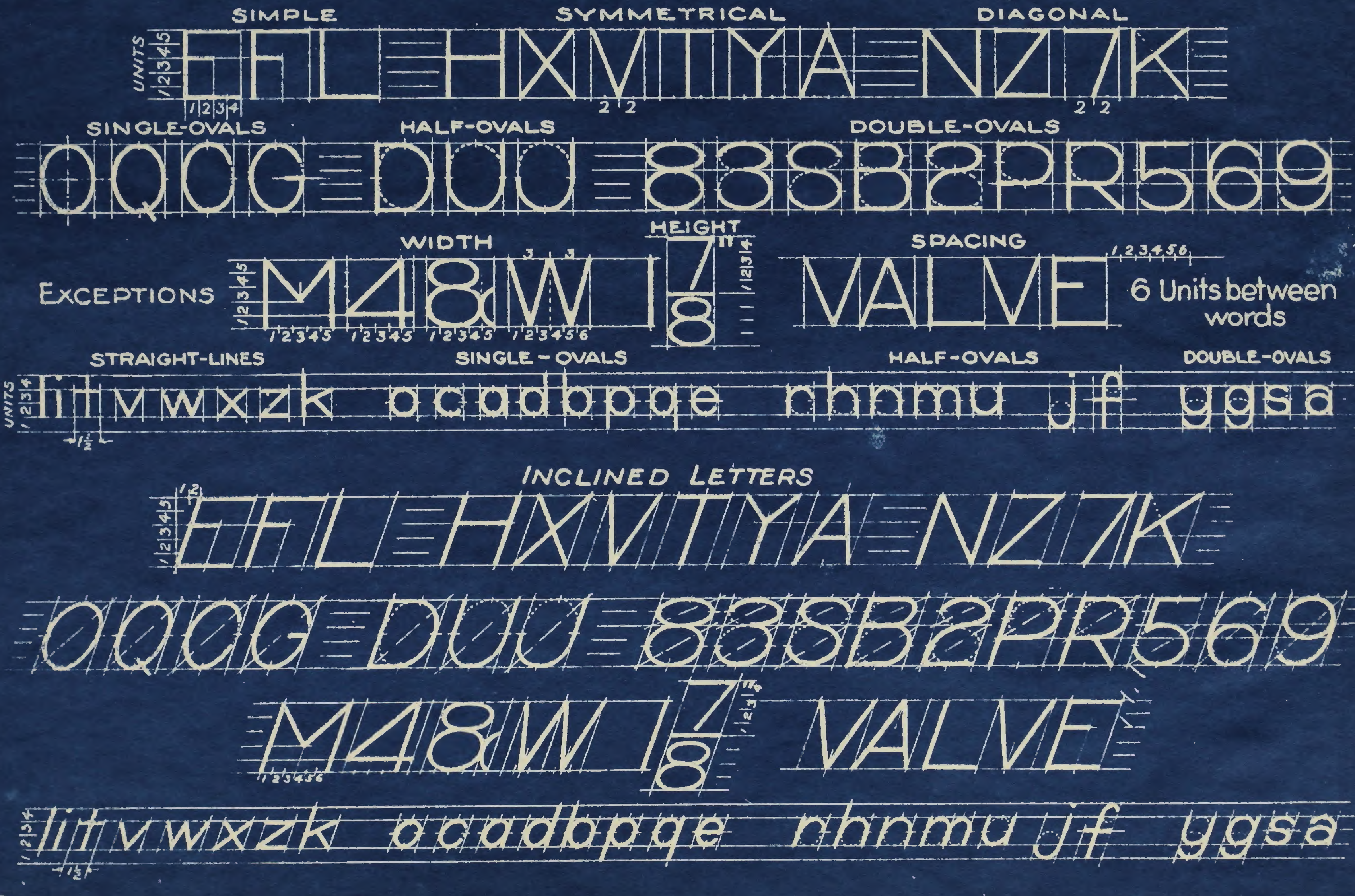
The division of the alphabet and the numerals into groups, based on construction, makes it easy to master lettering. Good lettering depends largely upon correct outlines and a uniform ratio between the areas of the letters and of the openings. The letters in the following groups are with a few exceptions five units high, four units wide, and spaced one unit apart. The inclined letters have a slant of 2 units to 5, or 70°


SIMPLE
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M48W 1 7/8
VALVE
6 Units between words
STRAIGHT-LINES
SINGLE-OVALS
HALF-OVALS
DOUBLE-OVALS
litvwxzk ocadbpqe rhnmu jf ygsa
INCLINED LETTERS
EFL HXVTYA NZ7K
OQCG DUJ 83SB2PR569
M48W 1 7/8 VALVE
litvwxzk ocadbpqe rhnmu jf ygsa

Designed by Floyd D. Slater, Rochester, N. Y.

LETTERING CHART.

GRADE X

MECHANICAL DRAWING

Prerequisite - Mechanical Drawing - Grade IX

To carry the work properly in advanced courses in mechanical drawing the following conditions must prevail: -

(1) The instructor must be professionally trained in the subject, that is, an expert in the work.

(2) A special drawing room should be provided and be properly equipped with special drawing tables, cabinets, shelves, models and other reference material.

(3) Drafting instruments of good quality should be required in all mechanical drawing courses.

FIRST QUARTER

PROBLEM No. 1 - Freehand letterings, - capitals, lower case letters, numerals, and fractions.

METHOD - State dimensions for large and small capitals, numerals, fractions and lower case letters.

It is advisable at all times to draw guide lines for the correct angle of slant before drawing the structure of the letter or numeral.

PROBLEM No. 2 - Reference chart for sectioning steel, wrought iron, cast iron, brass, copper, lead, Babbitt, wood glass stone, concrete, leather, rubber fiber, firebrick, and water.

METHOD - All sections should be spaced without the use of a scale or special instrument, the eye being the only guide in placing them evenly, and the student will follow a plan drawing which shows the sections.

All of the following problems should be dimensioned.

PROBLEM No. 3 - Sectional Drawing of a Coupling scale drawing.

METHOD - In order to make a drawing so that the invisible parts will be visible, a view is made showing a part in Section. This is an imaginary view showing the object as if a portion had been cut away by a saw and removed. The interior or inside would be exposed and could be seen. The invisible edges would then become visible.

The cut surfaces are then shown by section lining.

PROBLEM No. 4 - Sectional drawing of a box coupling.

METHOD - A two view scale drawing. Indicate material used.

PROBLEM No. 5 - Sectional drawing of an assembled Universal joint.

METHOD - A two view drawing. Indicate material used. Draw a scale drawing.

SECOND QUARTER

PROBLEM No. 1 - Tracing a machine drawing.

METHOD - The tracer must study the drawing to be traced and familiarize himself with the shapes of the parts; he will thus save much erasing.

Speed and accuracy are important.

PROBLEM No. 2 - Inking the traced drawing.

METHOD - Scrape a little powdered chalk or pumice stone and sprinkle lightly over the entire surface of the drawing so that the ink will flow not too readily. Trace in systematic manner or much time will be lost in waiting for lines to dry.

It is best to begin by inking all center lines.

PROBLEM No. 3 - Sectional drawing of a Shaft Bearing.

METHOD - A two view scale drawing. Ink the drawing.

PROBLEM No. 4 - Cylindrical Disc - Revolved Positions.

METHOD - Draw front view first, locate and letter the twelve points. In the second position the circular surfaces have been revolved about a vertical axis until they make an angle of 45°. By projection from the top, and the first view, complete the second view.

PROBLEM No. 5 - Ink Stand - Revolved positio n.

PROBLEM No. 6 - Rectangular Prism Revolved about a Horizontal and Vertical Axis.

THIRD QUARTER

PROBLEM No. 1 - Isometric Projection of a block.

METHOD - The principal lines of the block are always drawn 30° to the right and vertical.

Dimensions are always measured on these three lines.

PROBLEM No. 2 - Isometric Projection of a cylinder block.

PROBLEM No. 3 - Isometric projection of a step block.

PROBLEM No. 4 - Isometric Projection of a Crank.

PROBLEM No. 5 - Cabinet projection of a block.

METHOD - Select three axis to which all measurements of the object are drawn parallel - i.e., (1) a horizontal line; (b) a vertical line; and (3) a 45° line.

All dimensions are placed parallel to the axis in actual size.

PROBLEM No. 6 - Cabinet projection of a prism.

PROBLEM No. 7 - Cabinet projection of a step block.

PROBLEM No. 8 - Cabinet projection of a Crank.

FOURTH QUARTER

PROBLEM No. 1 - Auxiliary view drawing of a block with an oblique surface.

PROBLEM No. 2 - Auxiliary view drawing of a tent.

PROBLEM No. 3 - Auxiliary view drawing of a brace.

PROBLEM No. 4 - Auxiliary view drawing of a guide.

PROBLEM No. 5 - Auxiliary view drawing of an anchor plate.

PROBLEM No. 6 - Development of the surfaces of a cylinder.

PROBLEM No. 7 - Development of the surfaces of a hexagonal pyramid.

PROBLEM No. 8 - Development of the surfaces of a cone.

SUPPLEMENTARY MATERIAL FOR THE MECHANICAL DRAWING COURSE OF STUDY.

SUGGESTIONS FOR CHECKING DRAWINGS.

In checking see that -

1. The most illustrative views are selected and correctly projected.

2. All conventional lines are made according to adopted standards and graded to show contrast.

3. Center lines for all circles and large arcs are drawn.

4. Necessary dimensions are given, requiring no calculations by the workman.

5. Related dimensions appear on the same view if possible.

6. "Detail" and "overall" dimensions check not only with the scale but also by addition.

7. Dimension and notes are not repeated.

8. Arrowheads, figures and lettering are made uniform and neat.

9. All finished surfaces are marked.

10. All sections and notes which will add to the clearness of the drawing are properly made.

GRADE XI

MECHANICAL DRAWING

Prerequisite - Mechanical Drawing IX and X

FIRST QUARTER

PROBLEM No. 1 - A funnel, - a three piece development.

METHOD - Draw two views of the funnel. Make a development of each of the three pieces.

PROBLEM No. 2 - Development of a star cookie cutter.

PROBLEM No. 3 - Draw a parabola, the axis and longest double ordinate being given.

PROBLEM No. 4 - Draw a helix, the pitch and diameter being given.

PROBLEM No. 5 - Project views of intersected cylinders of **unequal** diameter.

PROBLEM No. 6 - Project views of a prism intersected by a cylinder.

PROBLEM No. 7 - Project views of a square prism intersected by a square pyramid.

SECOND QUARTER

PROBLEM No. 1 - Sectional view of a "V" screw thread.

PROBLEM No. 2 - Drilled and Tapped Holes.

METHOD - Illustrate methods used to represent various kinds of holes - showing diameter of holes, i.e. - drilled, tapped, counterbored, countersunk; view showing invisible depth of holes.

PROBLEM No. 3 - Drilled and Tapped Holes.

METHOD - Illustrate view showing holes in section; section of assembled parts of simple threads; section of assembled parts "V" profile.

PROBLEM No. 4 - Shading lines of front views of a block, mortised block on a horizontal level at an angle less than 45°, at an angle of 45° and at an angle of more than 45°.

PROBLEM No. 5 - Shading lines for a cylinder.

PROBLEM No. 6 - Shading lines for a sleeve nut, illustration - the method of shading conical surfaces.

PROBLEM No. 7 - Shading lines for a spherical surface, and a curved cylinder.

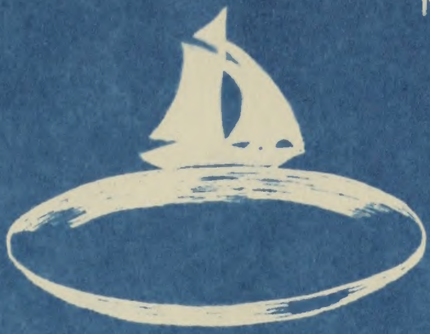
FOURTH QUARTER

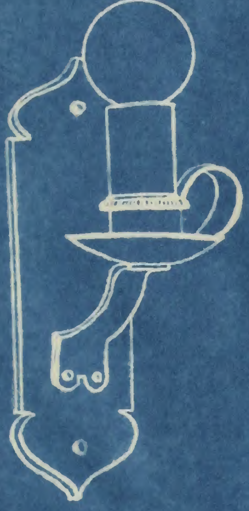
During this quarter the group will make perspective sketches of machine parts. All perspective drawings must be demensioned. The machine parts will be supplied by the school.

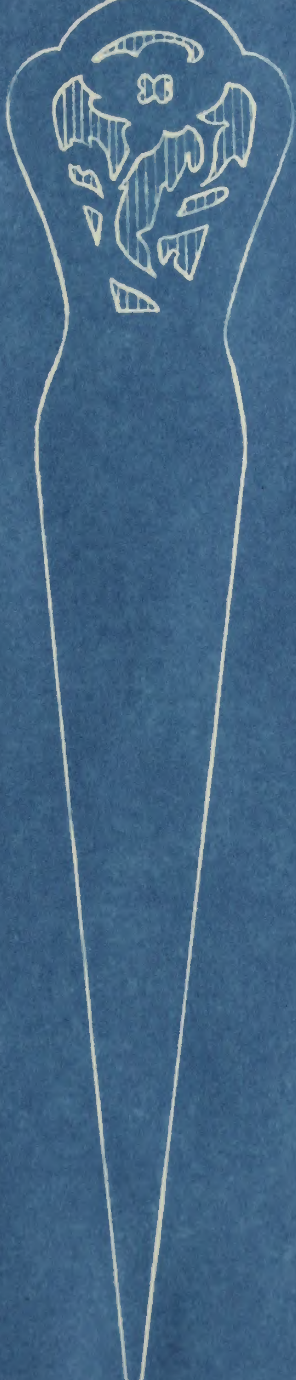
This practice in freehand perspective drawing should help the group to learn machine parts and their names.

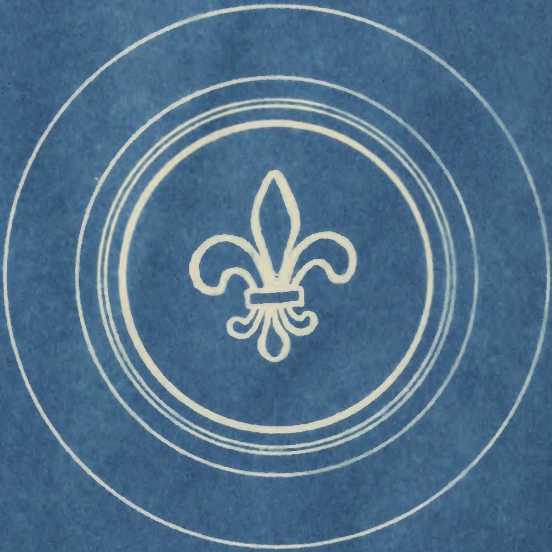
All perspective drawings should have correct shading lines and should be finished in ink.

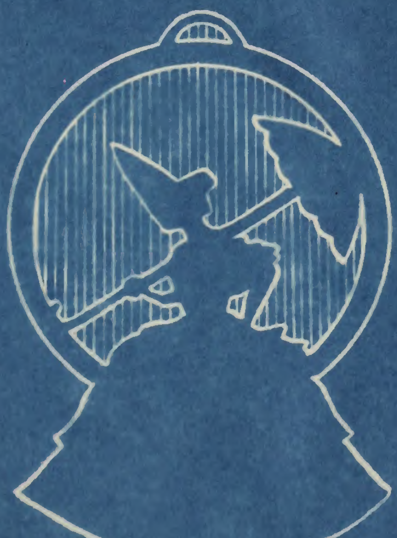
METAL CRAFT

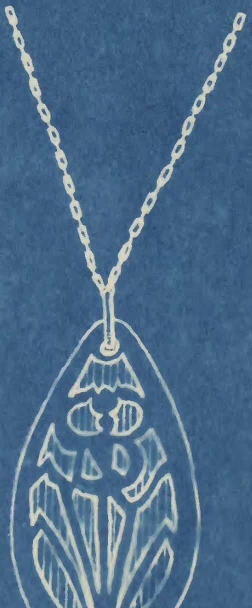












GRADE XI

METAL ART AND CRAFT

Prerequisite: Art IX or Design X.

The student must understand that he or she will pay for the metals, solder and stones required for his class work.

METHODS: 1. Introduction of the metal used and a vrief history of their production and composition, their alloys, ductibilities and melting points.

2. Notes to be kept by students in notebooks of sufficient size to permit the addition of sketches.

3. Students must be made conscious of the fact that Art Metal work is inseparable from design, so much so, that no problem should be worked out by a student until he has submitted a good sketch and plan of same to his instructor for criticism.

4. Introduction of the equipment, speaking of its use and make.

5. Each member of a class should be given the same work for a while at least, so as to give him ample opportunity of acquainting himself with the different tools and equipment, as well as of learning to know the limitations of the materials.

PROBLEM NO.1 - A watch fob, bag-tag, or name plate.

METHOD: This problem is to be done in one or the combination of two metals.

1. Apply design. 2. Proceed with hammering soft soldering, saw-piercing, coloring and finishing of metal.

3. The instructor should decide as to whether the student is to apply etching or repousse. 4. At this point instruction in the coloring of the various metals to be given. Student should take notes concerning the chemicals and acids used.

The class should be warned to work for proper size, proportion, pleasing design and good lettering.

PROBLEM NO. 2 - A paper knife or ornamental hinge.

METHOD: Students should use notes made during the progress of the first problem.

PROBLEM NO. 3 - Book ends.

PROBLEM NO. 4 - Stationery holder.

METHOD: With this problem, riveting is introduced.

PROBLEMS NO. 5 and 6 - Round and rectangular plate or tray.

METHOD: If this article is large enough, handles may be added by riveting.

PROBLEM NO. 7 - Rolling blotter or calendar stand.

PROBLEM NO. 8 - Inkstand.

OCCUPATIONAL INFORMATION CONCERNING[1] JEWELRY MAKING AND REPAIR

This branch of fine metal working furnishes employment for many operatives, mostly men. There are usually several divisions which in large shops work separately on some specialty. Ring making is an important division, with stone-setting as a sub-division. Many skilled men work interchangeably in all the departments, especially in smaller establishments. Then there is the very varied line of decorative and useful articles commonly on display in the jeweler's windows and show cases, such as pins, brooches and many other articles which are examples of the jeweler's art.

Repair and reconstruction work keeps many skilled workmen busy, and is exacting work, for the result must be flawless. Engraving is also a part of the jeweler's trade. The operations as a rule are done by hand, although some machinery is used. The tools are similar to those used in other light metal work, such as pliers, shears, metal-cutting saws, mallet, mandrels, files, tweezers, blowpipes, and soldering tools, with some peculiar to the trade. The business is considered generally healthful.

A knowledge of design is indispensible to those who wish to reach the highest place in the trade. Mathematics is helpful in a lesser but important degree. Proficiency

in all directions should be the aim of all taking this work, so that the skilled workman may take his place in any department needing his services.

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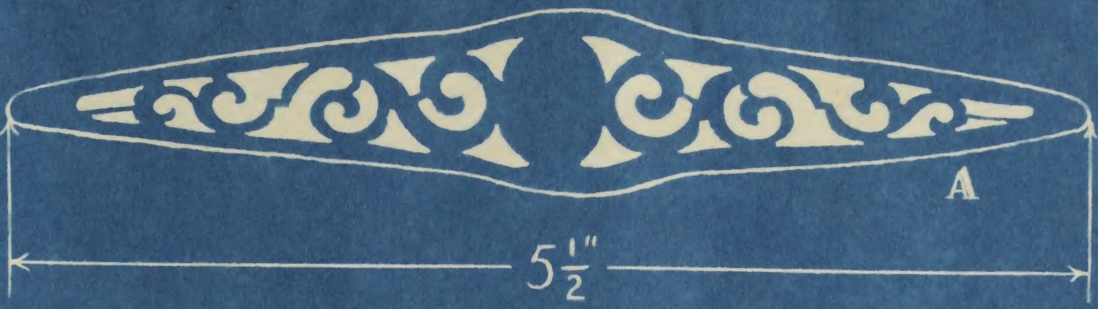
[1] Handbook of Vocational Courses; Buffalo N. Y. Tech. High School.



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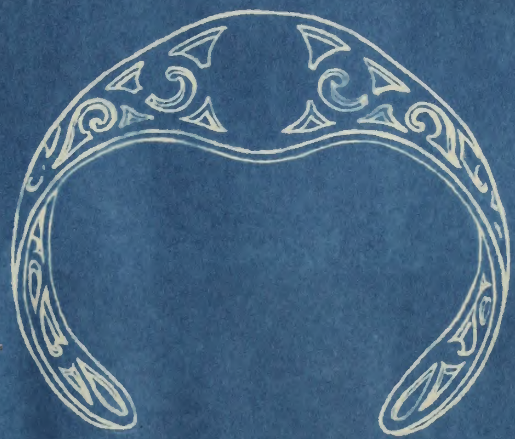
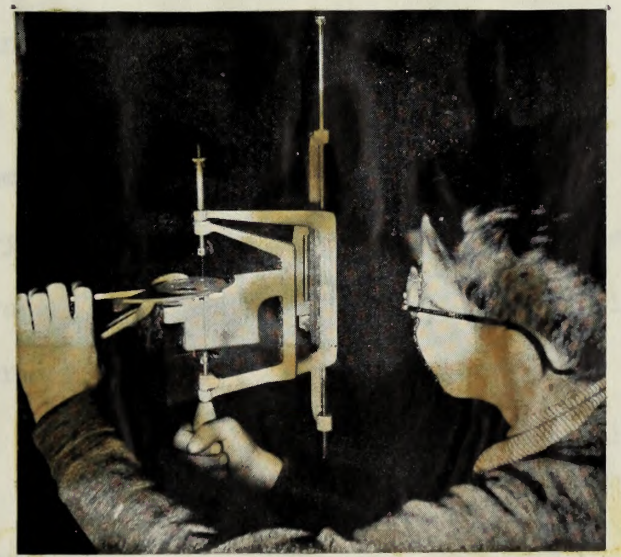


B

BAND BRACELET

Jewelry



GRADE XII

METAL ART AND CRAFT

Prerequisite - Art IX or Design X and
Metal Art and Craft XI.

PROBLEM NO.1 - A sawed or etched bracelet.

PROBLEM NO.2 - A ring, scarf pin, or pendant.

METHOD - Teach stone setting.

PROBLEM NO.3 - A spoon.

METHOD - Hard soldering of one metal upon another may be applied to the spoon design.

PROBLEM NO.4 - An ash tray.

METHOD - Riveting may be necesssry for the certain ash tray designs.

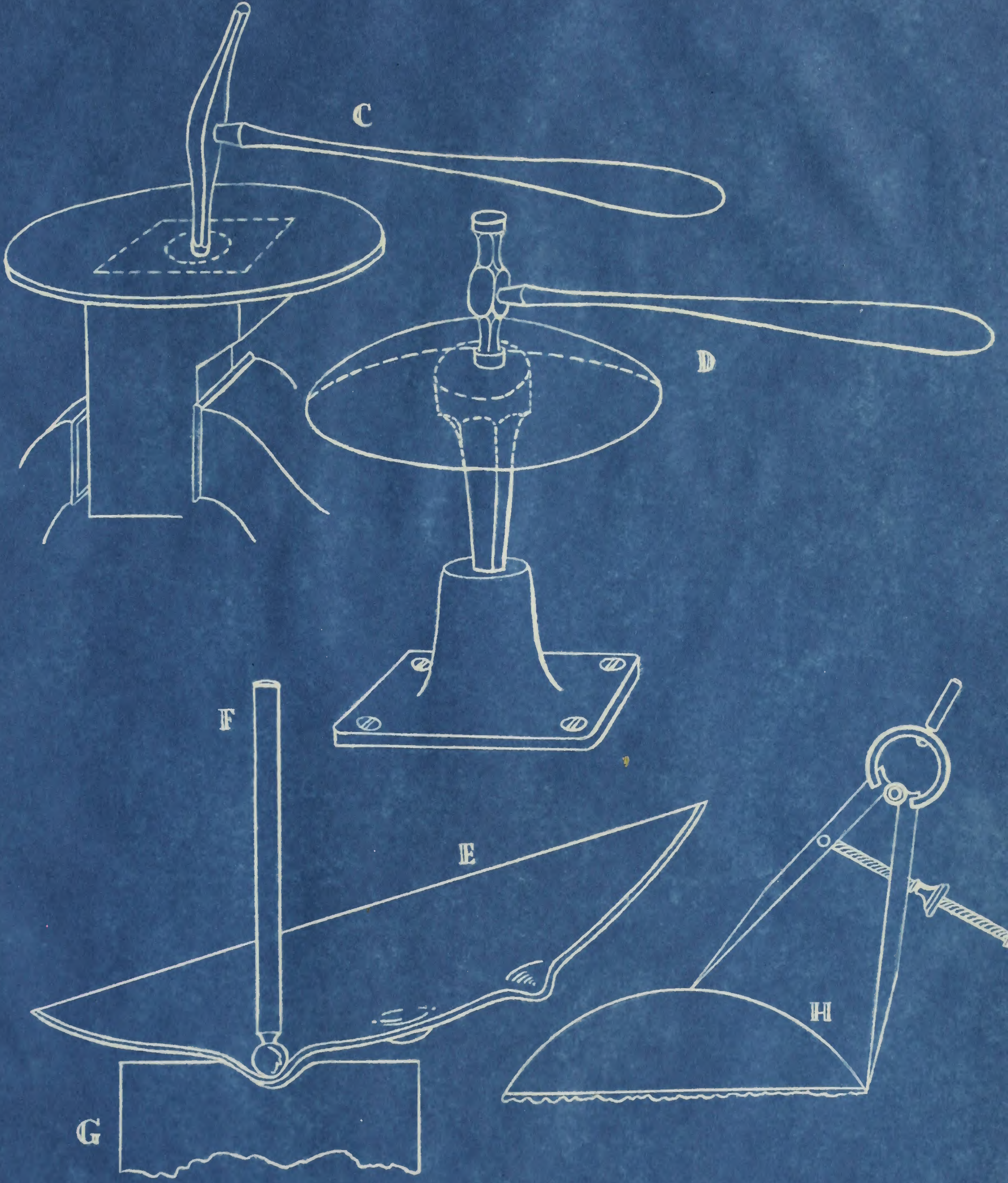
PROBLEM NO.5 - A plate or plaque.

METHOD - Hammering and repousse and modeling.

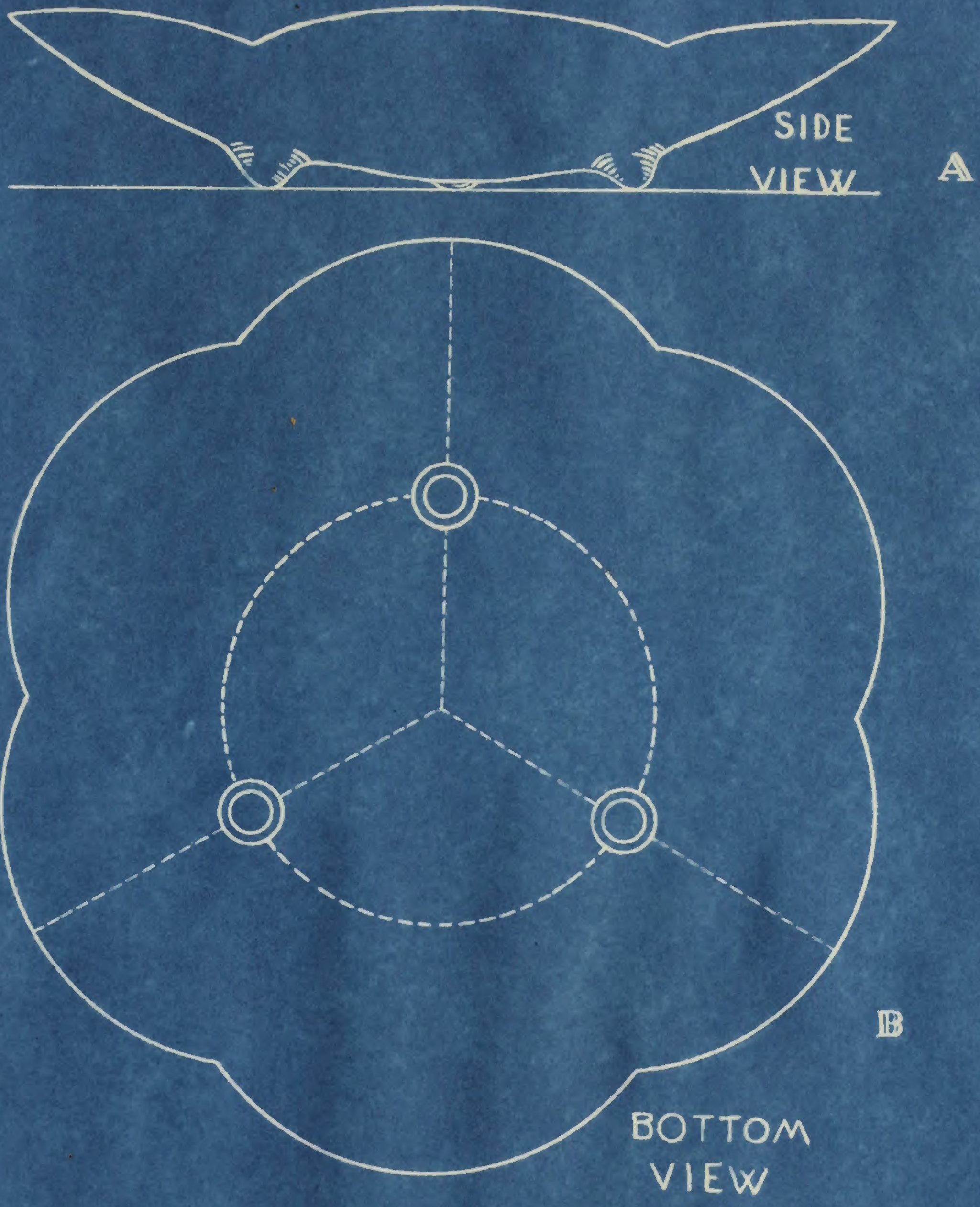
PROBLEM NO.6 - A one piece hammered bowl.

METHOD - In this type of hammered bowl the material for depth is obtained mainly by the stretching of the metal as it is hammered. Within reasonable dimensions for depth it is not often necessary, when securing metal, to allow more than ¼" all around, that is, ½" in excess of the proposed diameter of the bowl.

To make the 4¾" bowl, secure a piece of cold rolled annealed copper of No. 18 B. & S. gauge. From it cut out a 5¼" disc from compass markings, being careful to retain



MAKING THE ONE PIECE HAMMERED BOWL


SIDE VIEW
A
B
BOTTOM VIEW

ONE PIECE HAMMERED BOWL

the exact center of the disc by slightly deepening the compass point with a center punch. This mark is to be retained on the outside of the bowl.

Now being to shape. For this purpose it is necessary to acquire a ball faced hammer and a maple wood block, slightly hollowed. Place the center of the metal disc over the center of the hollowed wood block and begin to hammer from the center of the disc to the outside of same, rotating the disc while doing this. The hammer blows must be even and close together.

Continue to do this until the bowl is somewhat deeper than the finished depth is to be. When this is accomplished secure an iron stake with a surface slightly more domed than the bowl. On this regulate and smooth the surface by hammering with a hard wood mallet.

Follow this with a silversmiths' planishing hammer. Begin to planish, or further smooth the surface, by striking blow by blow in circular formation, starting from the center until the outer edge is reached.

After the bowl is evenly planished, trim the irregular outer edge. This is accomplished by inserting the compass into the original determined center, and scribe a line to trim the bowl evenly. For this you can use shears or a jewelers' saw.

Now divide the bowl into six even sections. Into these sections plan the graceful fluted design by drawing

the curve on a strip of stiff paper, cut out and use this as a templet to scribe the six fluted sections onto the bowl. With a No. 2 jewelers' saw cut out the fluted design as scribed, and then smooth the edges with a 6" "smooth" file.

Now proceed to locate the position of the feet by placing the compass in existing center and scribe a circular line around the bowl, to mark the spread determined upon. The exact triangular position of the feet is then found by drawing three straight lines from the center of the bowl to the center of each alternating flute. At the points where these lines intersect, the circular compass line, the feet are to be formed.

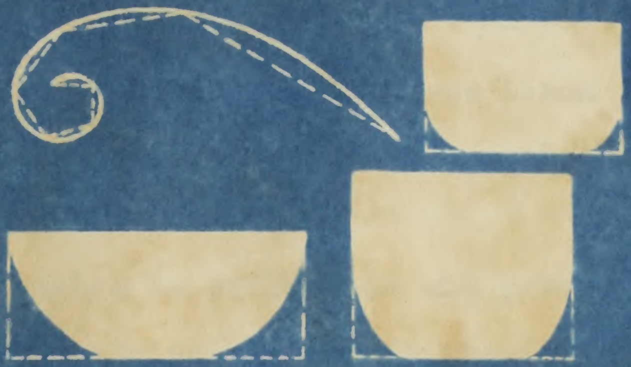
To form the feet a dapping punch is required. It is necessary to secure or make a small maple wood block with a small cavity in the top of shape to form the legs. Place the bowl over this cavity at the predetermined marks; then, by short, concise blows on the punch gradually drive the metal into the cavity in the maple block. By this method all three of the feet are formed.

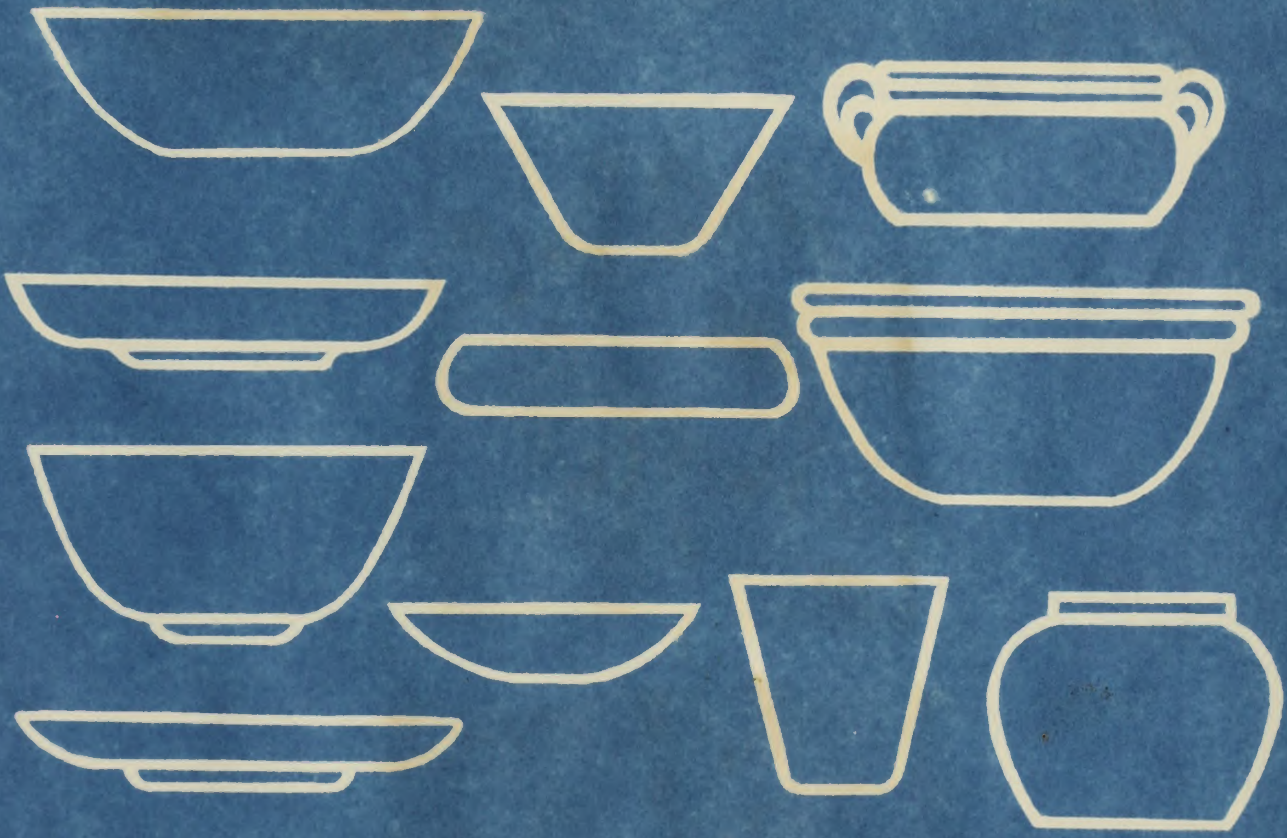
It is not necessary for this bowl to be annealed.

The bowl is now ready for finishing. Use Tripoli and rub all parts vigorously, then wash in ammonia solution and dry. If a high polish is desired, follow with Rouge; again wash in ammonia solution and dry. Then lacquer with metal lacquer.

Pottery

POTTERY FORMS DERIVED FROM RECTANGLES





POTTERY CRAFT

With the plastic medium of clay you learn to design in three dimensions and gain an appreciation of the importance of simplified forms.

Experience should be offered in all processes of the potter's art from the original design to the finished product, including the coil, the use of the potter's wheel, mould making, casting, glaze composition, glazing, stacking the kiln and firing.

The study of historic pottery includes American, Indian, Egyptian, Greecian and Modern pottery.

The class should have notebooks in which they should keep well written notes in dictated subject matter.

FIRST QUARTER

PROBLEM No. 1 - Design and model a bowl.

METHOD - Show examples of fine bowls and discuss the proportion and line suitable to use.

Demonstrate free cutting of bowl shape. Lead students in discussion of designs cut by class.

Demonstrate building a bowl by coil method. The class will design a bowl following these methods.

PROBLEM No. 2 - Design and model a vase form.

SECOND QUARTER

PROBLEM No. 1 - Design and make a tea tile with incised decoration.

PROBLEM No. 2 - Study of Indian, Greek and Egyptian Pottery.

METHOD - Discuss the styles and decoration of Indian, Greek and Egyptian pottery.

Use photographs of different types of pottery to carry on discussion.

Draw illustrations on the blackboard.

Discuss use of handles.

Demonstrate handle construction.

PROBLEM No. 3 - Model a vase of a bowl of typical Egyptian style.

METHOD - Study photographic views of Egyptian pottery.

Select a vase of the best Egyptian period.

Draw silhouette of vase on black drawing paper, - full scale.

Make vase.

THIRD QUARTER

PROBLEM No. 1 - Study Modern Pottery.

PROBLEM No. 2 - Design and model a vase after best examples of modern pottery. Decorate by building on design.

PROBLEM NO. 3 - Study the Technique of the potter's wheel and casting.

PROBLEM No. 4 - Design a bowl to be produced by throwing on potter's wheel.

FOURTH QUARTER

PROBLEM No. 1 - Design and produce a vase by throwing on the potter's wheel.

PROBLEM No. 2 - Make a plaster mould of a piece of pottery and cast a piece from the mould.

PROBLEM No. 3 - To weigh chemicals and make a simple glaze from formula and apply to pottery.

PROBLEM No. 4 - Study of glazing pottery, stacking and firing a kiln.

GRADE X

REPRESENTATION

The course in Representation should develop a keen sense of observation. It should develop an understanding of the underlying principles of perspective, and also develop a technique of rendering by means of which pupils may readily express their ideas.

FIRST QUARTER

PROBLEM No. 1 - Draw a still life group in pencil technique.

Problem No. 2 - Draw pose drawings of the members of the class in pencil technique. (fifteen to twenty minute poses.)[1]

PROBLEM No. 3 - Draw a pencil portrait.

PROBLEM No. 4 - Study of the composition of values in a well planned photograph, portrait or landscape.

METHOD - Draw the picture in outline with pencil, larger size, on a smooth surface paper.

Take a crow quill pen and ink the outline. Study darkest compositional values.

Take a brush and block in those values which build the foundation of the picture.

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[1] Refer to Sketching with Venus Pencils, by Harry W. Jacobs; American Pencil Co., N. Y. City, N. Y.

SECOND QUARTER

PROBLEM No. 1 - Take a painting, of good composition, by a well known artist. Draw this picture indicating only the three important values. Draw in charcoal.

PROBLEM No. 2 - Draw a charcoal picture of a full length caste.

PROBLEM No. 3 - Draw a design for a linoleum block for the school magazine.

THIRD QUARTER

PROBLEM No. 1 - Create a poster advertising foreign lands. This should be a composition in three values, each value a separate color-forming a silhouette effect. Use tempera paints.

PROBLEM No. 2 - Draw a perspective sketch of one of the school chairs, model stands or tables.

PROBLEM No. 3 - Draw a crayon technique sketch of an animal, - tiger, lion, cat, dog, etc.

PROBLEM No. 4 - Study the lines of a Japanese print and create decorative design for embroidery.

PROBLEM No. 5 - Design the 10th grade class pin (Optional)

FOURTH QUARTER

PROBLEM No. 1 - Draw a pastel sketch of a vase of flowers.

PROBLEM No. 2 - Draw a pastel sketch of a vase of flowers combined with a satin cloth background and a Chinese Buddha.

PROBLEM No. 3 - Draw a story illustration and paint with water-color.

PROBLEM no. 4 - Design the illustrations for the school magazine.

STAGE CRAFT

This course of study presents design work applied to "Stage Craft".

The class should make notebooks, collect pictures, draw free hand sketches and make tracings, collect notes from reference reading and experiment in expressing emotions through line, mass and value.

FIRST QUARTER

PROBLEM No. 1 - A dictated resume of the story of the stage.

PROBLEM No. 2 - Study of Greek and Roman Pageantry.

PROBLEM No. 3 - Study of Elizabethian Pageantry.

PROBLEM No. 4 - Study of Nineteenth Century and Modern pageantry.

PROBLEM No. 5 - Study of types of plays as comedy, tragedy, poetic, etc.

METHOD - Study of different types of plays, followed by simple sketches illustrating emotion as comedy, dignity, joy, etc.

Discussion of plays to determine their practicability for school production.

Experiments with stage equipment, properties, sets, curtains, etc., for composition and design.

Quick sketches of scenes and floor plans.

Class criticisms and discussions of effect from the viewpoint of practicability and beauty.

SECOND QUARTER

PROBLEM No. 1 - Designs for school plays.

METHOD - The class will collect color harmonies, pictures of furniture, interesting costumes, and stage settings.

Small layouts of scenes in black and white values should be shown.

Develop the idea that a scene is a plastic picture enclosed in a frame.

Discuss and experiment with color to make small pictures of stage settings.

Have class criticize the designs of settings.

Adapt the most appropriate scene to local stage.

Stress elimination of non-essentials and simplifications of stage settings.

THIRD QUARTER

PROBLEM No. 1 - Methods of stage make up.

PROBLEM No. 2 - Masks.

PROBLEM No. 3 - Study of stage costuming of the ages.

PROBLEM No. 4 - Drawings of costumes which will belong to the scene and environment of the stage settings already designed.

FOURTH QUARTER

PROBLEM No. 1 - Miniature stage model.

METHOD - Demonstrate the use of the miniature stage.

Give dimensions for reproducing miniature model of school stage to scale.

Select scenes to be produced by class, to scale, for the miniature stage.

Make plan sketches of parts.

Build stage, each member of the class making a separate section or piece of equipment for the stage.

If the class is large two or three stages may be made.

SCULPTURE

Prerequisite - Art IX

FIRST QUARTER

PROBLEM No. 1 - Model a decorative medalion in bas relief copying the style of medallion created by a Greek or Roman sculptor.

PROBLEM No. 2 - Collect illustrations of examples of Greek and Roman sculpture.

PROBLEM No. 3 - Finish cast in plaster of Paris.

SECOND QUARTER

PROBLEM No. 1 - Creative modelling with clay - Model an animal figure, tree or minature castle.

METHOD - Collect pictures or photographs of subjects which show three dimensions, light, shade, structure, and balance.

Select the picture or photograph which is your choice.

Model the subject in clay from picture and create extra decorative details of sculptured design if necessary for the finished composition of the cast.

PROBLEM NO. 2 - Make a mold by pouring plaster of Paris over the model.

Make a cast or impression from this mold.

THIRD QUARTER

PROBLEM No. 1 - Create a decorative plaque of festoons of fruit or flowers.

PROBLEM No. 2 - Make a cast.

FOURTH QUARTER

PROBLEM No. 1 - Model a humorous figure such as the figure of one of the cartoon characters of the present time. Model with Claystone or moist cement.

PROBLEM No. 2 - Create a pair of bookends or a paper weight. Model with Claystone or moist cement.

The following problem will be worth while for advanced students.

Model a portrait bust from the pose of a classmate or from a photograph.

Note: When time permits give notes on the following subjects:-

1. A survey of the masterpieces of sculpture in great museums and in original settings.

2. Give illustrated talks on American, French, Italian, Greek and Egyptian sculpture.

3. Give illustrated talks on great memorial sculpture, expressing the ideals and history of a nation.

Refer to "The Significance of the Fine Arts", by the Committee on Education of the American Institute of Architects; Marshall Jones Company, Boston 1926.

GRADE XII

PLANE SURVEYING

Prerequisites - Mechanical Drawing IX and X.

The object of the surveying course is to give a general understanding of the various jobs performed by a surveyor and to provide a specific technical information concerning the occupation of surveying.

Surveying is a subject which requires study, practice, and close observance of standard.

FIRST QUARTER

PROBLEM No. 1 - Survey of Instruments and Equipment and Their use.

METHOD - 1. Explain briefly the following: Purpose of the course; content of the course; qualifications of a surveyor and of his assistants; and the rules and regulations governing class meetings and student records.

2. Briefly explain each piece of equipment.

3. Explain the proper handling of the equipment under different conditions.

4. Explain what is understood by long and short chain, and subsequent recording.

5. Explain the meaning of "instrument-point."

6. Explain the meaning of "breaking chain."

7. Explain the use of the plumb bob in chaining up or down hill.

8. Expalin how and why reference points are established.

9. Explain how bench marks and turning points are established.

10. Explain the proper methods of recording:

    a. Transit notes (show on blackboard)
    b. Level notes (show on blackboard)
    (Use Lefax charts if available.)

11. Explain how topography is taken and recorded.

12. Explain what is understood by latitude and longitude; the difference between true and magnetic north; and what is meant by bearings.

13. Explain what is understood by -

    a. Open traverse.
    b. Closed traverse.
    c. Landmarks.

PROBLEM No. 2 - Plane Surveying and its Division.

PROBLEM No. 3 - Obstacles Which May Be Met and Overcome in Chaining Operations.

SECOND QUARTER

PROBLEM No. 1 - Duties of a Rod Man and Suggestions for obtaining Best Results in this Work.

PROBLEM NO. 2 - Duties of a Leveler and Precautions to be Observed in Taking Levels.

PROBLEM No. 3 - Duties of an Axman.

THIRD QUARTER

PROBLEM No. 1 - Duties of a Head and Rear Chainman.

PROBLEM No. 2 - Methods of Keeping Notes and the Duties.

PROBLEM No. 3 - Topographical Surveying.

FOURTH QUARTER

PROBLEM No. 1 - Stadia Surveying.

PROBLEM No. 2 - Cross Sectioning.

PROBLEM No. 3 - Slope

PROBLEM No. 4 - Drawing of one of the following - A map of a City precinct or a school district.

METHOD - Give definite instructions concerning map drawing.

Refer to "City Planning by Edward H. Bennett, taken from the "Significance of the Fine Arts" published by the Marshall Jones Co., Boston, 1926.

VI

THE EXHIBITION OF STUDENT ART WORK IN THE SCHOOL AND COMMUNITY.[1]

ART EXHIBITS FOR THE ART SUPERVISOR AND TEACHER

The good that comes from an exhibition of art work for the inspection of art supervisors and teachers should be along professional lines. When, however, the ideal is to exhibit in order to outdo the other exhibitors, the educational value is generally open to serious question.

School exhibitions of art work give the visiting supervisor the opportunity to compare his own pupils work with that shown in the exhibition. During the exhibitions or art conventions the teacher makes many contacts with other supervisors which result in improvement inspired directly by the lectures attended and the exhibits seen. Then too, the convention is the spot where representatives of manufacturers and distributors of supplies and materials send their exhibits. Demonstrations are given together with many samples, so that one can list supplies and learn the better products of various companies.

Each and every art exhibition may be made truly educational and not technical. This should be done because (1) every recent course of study in art stresses appreciation as a

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[1] Klar-Winslow-Kirby, Art Education in Principle and Practice. Pages 74-9, 364-7, 391-5 and 400-1.

leading objective (and as pointed out in texts, appreciation results from seeing the beautiful), and (2) There should be stressed in every exhibition of school art work the educational aspects.

Improvement over the prevalent procedure in the collecting and hanging of an exhibition of public school art work might well involve the following suggestions of assembling the material shown, under certain specific classifications:

(1) Creative work. Free art work may be taken to mean any original piece of work made entirely without the assistance or interference of a teacher.

(2) Memory drawings. Studies made entirely from memory. These might be either "home work" assignments or work done in the classroom.

(3) Illustrations: Drawings or paintings made as illustrations for various purposes. It is assumed that parts of such illustrations (illustrative drawings) may have, of necessity, been copied from legitimate, illustrative material, photographs, or mechanical reproductions made from objects or from nature.

(4) Development of technique. Copy drawings or copy parts of drawings which have been made especially for the purpose of practicing the technique of artists.

(5) Other types of art work, which contribute to the building up of ideas suggested by other school subjects, or which are expressions of the art impulse, not included in the above.

SUPPLEMENTARY EXPLANATORY MATERIAL

1. Exhibitions of work should be shown only in conjunction with a statement of the objective of the course or problem.

2. Some statement of method would be desirable.

3. The length of time required to do some of the pieces of work.
4. The total number of hours per week which the pupils spend in art classes.
5. The rank of the pupils in the art classes.
6. The age of the pupil or pupils.
7. Some biographical information on outstanding pupils.
    (a) Attitude toward general studies.
    (b) Parentage.
    (c) Ambitions.
    (d) Other art interests of the pupils.
8. The amount of teacher influence.
9. A copy of the course of study should be available.
10. Members of the art staff should always be present to answer questions.

The or (any) art exhibition must of itself be a work of art, in each of its units, and in its entirety.

EDUCATIONAL ART EXHIBITS

A definite starting point should be decided on. There may be a central idea around which may be grouped related ideas, or the work may be arranged in such a way as to lead up to a main piece of work. The problems that arise in placing an exhibition differ greatly with the size, number, and proportion of the floor spaces, and with the kinds of exhibits material used. Exhibit units, such as panels, posters, or small articles, may be grouped in a single booth, on a table or counter, in an open space, or in a division of the wall space. As in hanging pictures in a gallery, all materials should be brought as nearly as possible within the easy range

of vision of persons standing to view the exhibit.

Particular care should be exercised in placing labels and instructive descriptions. These should be large enough to be seen and read easily; they should be well designed but should not detract attention from or obstruct any of the art work.

Only work which is well done and has educational character should be included. The mounting should be done in an artistic way. Materials which may be used in mounting are cardboard, muslih, or burlap.

The work to be done in carrying out an exhibition may be divided into:

1. The selecting of exhibits.
2. Publicity for the exhibition.
3. Management of the event itself.
4. The administrative work for the following three fields. Those who will carry out the work may be the directing staff, the volunteer committee, and the workers.

REGULATIONS FOR EXHIBITIONS

All charts and drawings to be exhibited must conform to the following regulations:

1. All work exhibited must have been made during the past school year, or since the last exhibition.

2. None of the pieces exhibited should have been worked on by the art teachers or by anyone other than the pupil.

3. The work of one pupil should not be exploited at the expense of other pupils. Only two pieces of work will be shown by any one pupil, is a good rule to follow.

4. If co-operative or community drawings are exhibited each piece of work should be correctly labeled with the names of all the pupils who contributed to it.

5. Actual classroom products only should be exhibited. The exhibition is to acquaint the towns people with the regular results of instruction. The making of especially prepared exhibition pieces should be prohibited.

EXHIBITIONS IN STORE WINDOWS

A most effective place for an exhibition of the art work in a downtown store window. Vacant stores sometimes offer a better exhibition space than can be secured elsewhere, and it is generally much easier to secure the use of them. (Consult Art Magazines.)

One disadvantage of such publicity is that the numbers of students studying window dressing in any school is small. The work is highly specialized and the interest of both pupils and public is centered in a small group.

EXHIBITIONS AT THE PUBLIC LIBRARY

The Public Library is one institution which is most apt to be cordial to all movements in education in a community. The main objective of the library is in some respects quite similar to that of the school. In each case it is the education of the public. Libraries are usually planned with exhibition space. Some even have show windows like the department stores. Such space as is available may be readily secured at stated times by the school authorities for exhibition purposes.

EXHIBITS FROM THE SCHOOLS

General, special, and graded exhibitions from the schools should be the types of exhibition used most frequently. General exhibitions would consist of the work of all of the grades in the system, or of all the grades in a section of the school system. The Junior or Senior High School for example.

Junior and Senior school exhibitions may be of special types of work, as for example:

1. Posters designed to advertise the advantages of art as an elective subject in the senior high school.
2. Poster designs of locally manufactured articles.
3. Poster designs of local public institutions, as parks, playgrounds, exhibitions of garden club, and art club products.
4. Health posters.
5. Posters to announce or to advertise some civic event, as old home week, county and town fairs and civic celebrations.

It must also be realized that art makes a distinct and valuable contribution to learning in general and to the final products of the classes in other school subjects. Much of this work is good exhibition material. But is produced in schools scattered throughout the community and so that the gathering of it in one place becomes a broadly educational project. Some possibilities are:

1. Scrapbooks on several school subjects.
2. Dolls made and dressed for a children's hospital.
3. Better English week.
4. Puppet and silhouette shows.

VII

CONCLUSION

This thesis serves only to open up possibilities for future developments of the courses of study given in the Tentative Outline.

Because of lack of time and space the further research which certainly will be necessary to complete the Tentative Courses is not written in these pages. Therefore, the following outline may prove helpful for future revision.

REVISION SHEET[1]

1. Changes in organizations.
2. Changes in content.
3. Parts that are most helpful.
4. Parts which should be eliminated.
5. Additions which should be made.
6. Types of content that should be included.
7. Materials for Reference.

In the field of art as in any other field of study we should be looking forward to the day after tomorrow.

Much of the educational value of art teaching lies in the teacher's point of view. If the teacher is academically minded, he will tend to ignore the relation of art to the student's life, his home, and his immediate surroundings, and will try to make productive artists of all his students. Painting pictures and making designs for commodities are not sufficient to place art work in the junior and senior high schools on an educational basis. Something must be done to show students how art in everyday life is

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Art expresses as no words ever can, the life ideals of a nation.

Art education can perform a service here by showing that art has never belonged to any one group of people but has developed in every civilization. As boys and girls gradually become familiar with the best produced by every nation and every race, they should develop a respect for excellence wherever it may be found and an attitude of toleration toward all races and nations of men that would prevent the formation of racial and social prejudices.[3]

"The aim of education is the harmonious personality, that is, the natural development of all positive, physical and mental, mechanical and artistic, social and moral powers and inclinations of the individual. The one ideal pervading all is a free, broad, unbiased, universally human conception of life."[4]

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[1] A Course of Study for Junior High School, Belmont, Massachusetts, 1936-1937.

[2] Lecture on "Art in Public Schools by Albert W. Heckman, Teachers College, Columbia University.

[3] The Effect of the World War on European Education, Fritz Kellerman, Harvard Bulletin in Education, No. XIII, 1928, page 58.

[4] Thesis Art Education in a Comprehensive Senior High School, Margaret Loring, B. U. School of Education, 1931

BIBLIOGRAPHY

TEXTBOOK

A textbook in art should be used systematically in each high school year. There should also be ocassional library or museum assignments. Outside work should take the form of museum or library assignments. Pupils should be allowed, as in other subjects, to take their textbooks home.

The following textbooks are on the approved list of art courses -

Brown, H.H., Applied Drawing, Mentzer, Bush & Company

Degarmo, C., and Winslow, L.L., Essentials of Design, The Macmillan Company

Prang, L., Art Education for High Schools, The Prang Co.

Winslow, L.L., Elementary Industrial Arts, The Macmillan Company

REFERENCE BOOKS

The following bibliography is intended for the teachers' use in the daily preparation of work. It contains, however, some titles that are already on the regular high school textbook list together with other titles which should serve as excellent reference material for pupils. As a whole, the list of books may be considered as constituting a minimum library of essential information on art, especially adapted to the purposes of instruction in high schools. Consequently, the

bibliography should serve as a basis for acquiring art books for either a junior or senior high school library.

GENERAL EDUCATIONAL

AUTHOR	TITLE	PUBLISHERS
Caldwell, O.W.) Courtis, S.A.)	Then and Now in Education	World Book Co.
Cubberley, E.P.	History of Education	Houghton-Mifflin Company.
Dewey, John	Democracy and Education	Macmillan Co.
Dewey, John	How We Think	D.C.Heath Co.
Dewey, John	Moral Principles in Education	Houghton-Mifflin Company.
Dewey, John	The Child and the Curriculum	Univ. of Chicago Press.
Dewey, John	Schools of Tomorrow	E.P.Dutton
Hollingsworth, L.S.	Special Talents and Defects	Macmillan Co.
Jennings, H.S.	Suggestions of Modern Science Concerning Education	Macmillan Co.
Kilpatrick, W.H.	The Project Method	Teachers College, Columbia Univ.
Koos, Leonard V.	The American Secondary School	Ginn & Co.1927
Russell, Charles	The Trend in American Education	American Book Co.
Snedden, David	Educational Sociology	Century Book Co.
Spain, C.L.	The Platoon School	Macmillan Co.
Thorndike, E.L.	Educational Psychology	Teachers College, Columbia, Univ.
Van Loon	The Story of Mankind	Boni & Liveright

AUTHOR	TITLE	PUBLISHERS
Wells, H: G.	The Outline of History (2 volumes)	Lippincott
Well, M. E.	The Project Curriculum	Lippincott
Whitford, W. G.	An Introduction to Art Education	D. Appleton & Co. New York City
Winslow, L.L.	Organization and Teaching of Art	Warnith & York Baltimore

GENERAL ART

AUTHOR	TITLE	PUBLISHERS
Beck, ----	Better Citizenship Through Art Training	Davis Press
Beck, Walter	Self-Development in Drawing	F.P.Putman's Sons 1928
Bement, Alon	Figure Construction	Gregg Pub. Company Boston
Brown, H.H.	Applied Drawing	Mentzer,Bush & Co. Chicago, Ill.
Cheney, Sheldon	Primer of Modern Art	Boni & Liveright, New York
Cortissoz, Royal	American Artists	Charles Scribners Sons, N. Y.
Cox, George	Art for Amateur and Student	Page & C6., Garden City, N. Y.
Goldstein,H.&V.	Art in Everyday Life	The Macmillan Co., N. Y., 1925
Guptil,Arthur L.	Sketching and Rendering in Pencil	Pencil Point Press, New York
Jackman, R. D.	American Arts	Rand,McNally & Co. Chicago, Ill.
Lemos, Pedro	The Art Teacher	School Arts 1932
Lemos, Pedro	Applied Art	Pacific Press Co. Mountain View, Colo.
Lemos, Pedro	Art Simplified	The Prang Co. N. Y.

AUTHOR	TITLE	PUBLISHERS
Neuhaus, Eugen	Art Appreciation	Ginn Co., Boston
Norton, D. M.	Elementary Freehand Perspective	Bridgman, Pelham, New York
Ross, D.W.	On Drawing and Painting	Houghton, Mifflin, Co., New York
Sargent, Walter	How Children Learn To Draw	Scribners
Sargent, Walter	Industrial & Applied Art Book 8	Mentzer, Bush Co., Chicago, Ill.
Sargent, Walter	Practical Art Book 8	Mentzer, Bush Co., Chicago, Ill.

FINE ARTS

AUTHOR	TITLE	PUBLISHERS
Hatt, J. H.	The Colorist	D. Van Nostrand Co.
Jacobs, Michael	The Art of Color	Doubleday-Page & Co. 1927
Luckiesh, M.	Color and Its Application	D. Van Nostrand Co.
Luckiesh, M.	Light and Color	D. Van Nostrand Co.
Sargent ,Walter	The Enjoyment and Use of Color	Scribners, 1923
Snow, B. E. & Froehlech, Hugo B.	Theory and Practice of Color	The Prang Co., N. Y.
Wirling, Jane B.	More Color for You	Abbott Educational Co., Chicago, Ill.
Weinberg, Louis	Color in Everyday Life	Moffat

DESIGN

AUTHOR	TITLE	PUBLISHERS
Batchelder, E. A.	Design in Theory and Practice	Macmillan Company, N.Y.
Bonsor, Pelicam	Graphic Aids in Decorative Design	Davis Press, Worcester
Chase, J.E.	Decorative Design	John Wiley & Son, New York

AUTHOR	TITLE	PUBLISHER
DeGarmo & Winslow	Essentials of Design	Macmillan Company
Dow, A. W.	Composition	Doubleday-Page & Co., Garden City, New York
Hambidge	Dynamic Symmetry	Yale Univ. Press
Lawrence & Sheldon	Use of the Plant in Decorative Design	Scott Forsman & Co.
Sprague, E.& Co.	How to Design Greeting Cards	Bridgman Pub. Company
Maynard, Adolph B.	Creative Design	

HISTORY OF ART

AUTHOR	TITLE	PUBLISHER
The American Inst. of Architects	The Significance of the Fine Arts	Marshall Jones Co., Boston
American Federation of Art	Art in Our Country (Handbook)	
DeForrest & Caffin	A History of Art	Dodd Mead & Co.
Elie Faure	History of Art (4 vols.) I Ancient Art II Mediaeval Art III Renaissance Art IV Modern Art	Harper & Bros., 1921-1924
Fenollosa, E.R.	Epochs of Chinese and Japanese Art	F.A. Stokes & Company
Gardner, Helen	Art Through the Ages	Harcourt Brace & Co., New York
Goodyear	History of Art	Macmillan Company
Hamlin, T.F.	The History of Architecture	Longmans, Green & Co.
Hawes, C. H.	Crete, The Forerunner of Greece	Harper & Bros.
Jordan, Jan	Modern French Art	John Lowe Company
Lethaby, William F.		Scribners

AUTHOR	TITLE	PUBLISHERS
Magonigle, Harold Van Buren	Nature Practice and History of Art	Charles Scribner's Sons
Male, Emile	Religious Art in France	Dutton
Maspero, G.C.C.	Manual of Egyptian Archaeology	Putnam, New York, 1914
Powers,H.H.	Masters of Greek Art	Macmillan Company
Reinach, S.	Apollo	Scribners,N. Y., 1917
Taine, H. A.	Ideals of Art	Holt, N. Y., 1875-1877
Tolstoy, Count Leo	What is Art	Altemus, Phila., 1898
Van Dyke, J. C.	What is Art	Scribners
Vasari, Georgio	Lives of Famous Painters	Macmillan Company
Walters, H. B.	Art of the Greeks	Methuen, London
Woelfflin, Heinrich	The Art of the Italian Renaissance	Putnam, N. Y., 1913
Wright, W. H.	Modern Painting, Its Tendency and Meaning	John Lane Co., N.Y., 1915
	RECORDS AND ADVERTISING	
Butler	A Story of Papwe Making	Milton Bradley Co.
Brassington	History of the Art of Book Binding	
Clodd	The Story of the Alphabet	Appleton
Cockerill	Book Binding and the Lore of Books	Appleton
Dana	Book Binding for Libraries	Chicago Library Bureau
Davenport, C.	The Book, Its History and Development	Van Nostrand Co.
Day, L. F.	Alphabets, Old and New	Scribners
Debbler	The Newspaper	Henry Holt, N. Y.

AUTHOR	TITLE	PUBLISHER
Farnsworth	Illumination	George Doran Co.
Gaudy	The Alphabet	Mitchell Kennerly
Jacobs	Alphabets and Letters for Lettering	Milton-Bradley Co.
Johnson	Writing, Illuminating and Lettering	Macmillan Co.
Lamprey	In the Days of the Guild	Stokes
Mason	A History of the Art of Writing	Macmillan
Price, M.	Poster Design	G.W.Bricka,N.Y.
Parsons	Principles of Advertising Arrangement	The Prang Co.
Rawlins	The Story of Books	Appleton
Richardson	Beginnings of Libraries	Princeton Univ. Press
Smith, A.	Printing and Writing Materials	Author,Phila.
Stevens, T.V.	Lettering	The Prang Co.N.Y.
Tannahill,S.B.	P's and Q's, A Book on the Art of Letter Arrangement	Doubleday,Page & Company
Varnum, W.H.	Industrial Arts Design	Manual Arts Press 1925
	CONTAINERS	
Barber	Pottery and Porcelain of the U.S.	Putnam
Bassett	The Story of Porcelain	Pen Publ.
Binns, C. F.	The Potters Craft	Van Nostrand Co.
Binns, C. F.	The Story of Pottery	Geo.Newness,Ltd.
Birch, S.	The History of Ancient Pottery	London,Barnard & Quaritch

AUTHOR	TITLE	PUBLISHERS
Blanchard	The Basketry Book	Scribners
Brown, B.F.	Clay Modelling for Infants	Putnam
Buxton, & Curran	Paper and Cardboard Construction	Manual Arts Press
Chase & Clow	Stories of Industry	Educational Pub. Company
Chenery, W.L.	Industry in Human Welfare	Macmillan Company
Eberlein, H.D.& McClure,A.	American Arts and Crafts	Lippincott Co.
Elliott, C.W.	Pottery and Porcelain from Early Times	Appleton , N. Y.
Hasluck	Basket Work of All Kinds	Funk & Wagnalls McKay
James	How to Make Indian and Other Baskets	Radiant Life Press
Jervis	Pottery Primmer	P. Jerns, Oyster Bay, New York
Jewett, L. F. W.	Ceramic Art of Great Britain	S. J. Bertue, London
Lemos, Pedro	Color, Cement Handicraft	Davis Press, Wor.
Lester, Lath	Clay Work	Manual Art Press
Mason, O. T.	Aboriginal American Basketry	U. S. Nat'l Museum Report,Washington, D. C., 1902
Nichols, G. W.	Pottery, How It is Made	New York, 1878
Phelps & Arbuckle	Constructive Design	Scott, Forsman & Co.
Ries, H.	Clays, Their Occurence and Use	Wiley
Ries,H. and Leighton, H.	History of Clay Working Industries	Wiley

AUTHOR	TITLE	PUBLISHERS
Richards, C. R.	Art in Industry	Macmillan Company
Tinsley, L. R.	Practical and Artistic Basketry	Barnes
Walters	History of Ancient Potters (2 vols.)	Scribners
Wheatley, H. B.	Art Work in Earthen Ware	Scribner & Welford, N. Y.
White, Mary	How to Make Baskets	Doubleday - Page & Company
White, Mary	How to Make Pottery	Doubleday- Page & Company
The Encyclopedia:	Ceramics and Glass	

ARCHITECTURE, HOME PLANNING, AND FURNISHING

AUTHOR	TITLE	PUBLISHERS
Benson & Weaver	The Book of Queen's Doll House	Dodd, Mead & Company, Methuen, London
Bevier	The House	
Burbank	Be Your Own Decorator	Dodd, Mead & Company
Byne, Arthur	Spanish Interiors and Furniture	Putnam, N. Y.
Caffin, Charles H.	How to Study Architecture	Dodd, Mead & Co.
Candu	Decorative Styles & Periods	F. A. Stokes
Carric	The Next-to-Nothing House	
Claphan & Godfrey	Some Famous Buildings and Their Story	
Clark, Arthur B.	Art Principles in Furniture and Village Building	Stanford Univ. Press
Dalzell, J. R. & McKinnon, J	Blueprint Reading and the Building Trades	Am. Technical Society, 1929
Earle	Home Life in Colonial Days	Macmillan Company

AUTHOR	TITLE	PUBLISHERS
Eberlein, H. D.	Architecture of Colonial America	Little, Boston, 1915
Eberlein, H. D. & McClure, A.	Early American Arts and Crafts	Lippincott
Eberlein, H.D. & McClure, A.	Practical Book of Period Furniture	Lippincott
Edgell, G. H.	American Architecture of Today	Scribner, New York, 1928
Fales	A Simple Course in Home Decorationn	
Field, W. B.	Introduction to Architectural Drawing	
Ferguson, James	History of Indian and Eastern Architecture	Murray, London, 1910
Frohne, A.F. & Jackson, B.	Color Schemes for the Home and Model Interiors	
Goodenough & Adams	The Honest House	Century Company
Hamlin, T. F.	The American Spirit in Architecture	Yale Univ. Press, 1927
Jaggard, W.R.	Architectural and Building Construction Plates (Folio)	
Jaggard, W.R.	Architectural and Building Construction	Univ. Press, Cambridge, 1919
Harbeson, J.F.	The Study of Architectural Design	The Pencil Points Library, The Pencil Points Press, Inc., New York, 1927
Hertz	The Decoration and Furnishing of Apartments	Putnam
Mitchell, C.F. & G.A.	Building Construction, (Separate Volumes) Elementary and Advanced Courses	B. T. Batsford Ltd., London, England 1919

AUTHOR	TITLE	PUBLISHERS
Izor, E. P.	Costume Design and Home Planning	Atkinson, Metzer Co.
Jackway, B.F.	The Principles of Interior Decoration	MacMillan Co.
Kimball, S.F. and Edgell, G.H.	History of Architecture	Harper & Bros, N.Y.
Mumford, Lewis	Architecture	American Library Assoc.
Northend, M.H.	Colonial Homes, Their Furnishing	Little
Northend, M.H.	Art of Home Decoration	Dodd, Mead & Co., N.Y.
Parsons, F.A.	Interior Decoration	Doubleday, Page & Co.
Priestman	Art and Economy in Home Decoration	Lane
Quinn, Mary J.	Planning and Furnishing the Home	Harper & Bros.
Rouilian, L., and C.G.Ramsay	Architectural Details	Wiley, 1924
Ruskin, T	The Seven Lamps of Architecture	
Svenson, C. L., and I.G.Shelton	Architectural Drafting	Van Nostrand, 1929
Tallmadge, T.O.	The Story of Architecture in America	Norton, N.Y., 1929
Thompson	The History of the Dwelling House	Lippincott
Turner, H.H. & Webb, M.F.	Architectural Practice and Procedure	B.T.Batsford, Lt., 94 High Holborn, London.
Wallick, E.	Inexpensive Furnishing	Hearst International Library.

AUTHOR	TITLE	PUBLISHER
Warren, W.	Engineering Construction Part I-Steel and Timber Part II-Masonry and Concrete (2 volumes)	Longmans, Green & Co., 1921
Wright,	Interior Decoration for Modern Needs	Stokes
Youtz, P.N.	Sounding Stones of Architecture	Norton, N. Y., 1929

CIVIC AND HOME GROUNDS DESIGN

AUTHOR	TITLE	PUBLISHER
Brown, Glenn	European and Japanese Gardens	J.C.Winston Co.
Caylor, Mrs. B.	Japanese Gardens	Dodd, Mead
Dean	The Livable House Its Gardens	Home Beautiful Publishing Co.
Earle, A. M.	Old Time Gardens	Macmillan Co.
Freeman	The Home Vegetable Garden	Macmillan Co.
Hamlin, T.F.	The Enjoyment of Architecture	Duffield & Co.
Humphreys	A Practical Book of Garden Architecture	Lippincott
Kimball, T.	List of References on City Planning	Library School of Landscape,Arch. Harvard Univ.
King, Frances	The Little Garden	Atlantic Monthly Press.
Lowell, Guy	American Gardens	Bates & Guild Co.
Mario, E. B.	American Playgrounds	Baker & Taylor Co.
Nichols, R.S.	English Pleasure Gardens	Macmillan
Rivington	Art and Life and the Building and Decorating of Cities	Series of lectures by members of Arts & Crafts,Pub. by Rivington,Percival & Co.(London)

AUTHOR	TITLE	PUBLISHER
Root	Landscape Garden Series	Garden Press, Danvenport, Ia.
Root & Kelley	Landscape Gardening	Century Company
Robinson, William	Parks and Gardens of Paris	Macmillan Co.
Robinson, C.W.	Modern Civic Art	Putnam
Robinson, C. M.	The Improvement of Towns and Cities	Putnam
Sexby, J.J.	The Municipal Parks, Gardens and Open Spaces of London	Scribner
Tabor, Grace	Old Fashioned Gardens	McBride
Tabor, Grace	The Landscape Garden	McBride
Tabor, Grace	The Garden Primer	McBride
Triggs, H. J.	Art of Garden Design in Italy	Longmans, Green & Company
Triggs, H. J.	Formal Gardens in England And Scotland	Scribners
Triggs, H. J.	Town Planning, Past, Present, and Possible	Scribners
Union, R.	Town Planning in Practice	Union London
Van Renselaer	Art of Out-of-doors	Scribner
Wharton, Edith	Italian Villas and their Gardens	Century Co.
Wilcox, D.F.	Great Cities in America	Macmillan Co.
	Letters by Arts and Crafts Societies	Percival & Co. London.

Phamplets Issued by the Playground Society of America
Annual Reports of Park Commissioners
Wachers Manual of the Planning of Chicago.
Bulletins of the Municipal Art Society, N. Y.

AUTHOR	TITLE	PUBLISHER
Baldt	Clothing for Women	
Burbank	Woman as Decoration	Dodd,Mead & Co.
Carpenter	How the World is Clothed	American Book Co.
Challoruel	History of Fashion in France	
Cook	A Day with the Leather Workers	Hodder & Stoughton
Earle, A.M.	Two Centuries of Costume in America	Macmillan
Hall, Jennie	Weavers and Other Workers	Rand
Hall, E. C.	Hand Woven Coverlets	Little,Brown & Co.
Hooper	Hand Loom Weaving	Macmillan Co.
Hooper	Weaving with Small Appliances	Putham.
Hughes, Talbot	Dress Design	Macmillan
Kissell,M.	Yard and Cloth Weaving	Macmillan
McCormack	Spool Knitting	Davis Press
Mijer, Pieter	Batiks and How to Make Them	Dodd,Mead & Co.
Pellew	Dyes and Dyeing	McBride
Parsons	Psychology of Dress	Doubleday,Page & Co.
Quigley,	What Dress Makes of Us	Dutton
Rhead, E.E.	Chats in Costume	Stokes
Woolman	Clothing-Choice, Care and Cost	Lippincott
Woolman & McGowan	Textiles	Macmillan

AUTHOR	TITLE	PUBLISHER
	SCULPTURE	
Frothingham and Marquard	History of Sculpture	
McSpadden	Famous Sculptors of America	
Taft, Lorado	The Appreciation of Sculpture	Am.Lib.Associa. Chicago
Taft, Lorado	History of American Sculpture	The Macmillan Co. New York
Taft, A. H.	Modelling and Sculpture	J.P.Lippincott Co. New York
	CRAFTS	
Payne, A.F.	Art Metal Work	Manual Art Press, Peoria
Payne, A.F.	Pewter Design and Construction	Bruce Publishing Co. Milwaukee
McCowen & Jones	Continental Stage Craft	
MacKay	Costumes and Scenery for Amateurs	
MacKay	Patriotic Plays and Festivals	
Mathews, J. Brander	History of the Theatre	
Stratton	Producing in the Little Theatre	
Stuart	Stage Decoration in France	
MECHANICAL	DRAWING AND MACHINE DESIGN	
Anthony, G.C.	Mechanical Drawing	Heath, N. Y.
Brahdy, J.	Blueprint Reading for the Machine Shop and Related Trades	McGraw,1929
Crawshaw & Phillips	Mechanical Drawing in Secondary Schools	Scott,Forsman, N. Y.

AUTHOR	TITLE	PUBLISHER
Cross, A. K.	Mechanical Drawing, A Manual for Teachers and Students	Ginn & Co., N. Y.1895
Dietzgen Co.	Use & Care of Drawing Instruments	
French & Svenson	Mechanical Drawing for High Schools	McGraw,Hill, N. Y.
Fry, Horace P.	Notes on Mechanical Drawing	Univ. of Pennsylvania Press.
Giesecke	Technical Drawing	
Griffin, C.L. and Fortman,R.H.	Machine Drawing, American Technical Society, Chicago, 1930.	
Gueth, Oswald	Mechanical Drawing Manual	Theo.Audet & Co. 49 West 23rd St.N.Y.
Hoffman, J. D. and Scipio, L.A.	Elements of Machine Design	Ginn & Co.,N.Y.1928
Howe, Charles B.	Mechanical Drawing Manual Mechahical Drafting	
I.C.S.Reference Library	Geometrical Drawing, Mechanical Drawing, Sketching Practical Projection, Development of Surfaces	International Textbook Co.Scranton, Pa., 1905
Mathewson, F.E. & Stewart	Applied Mechanical Drawing	Taylor, Holden Co., Springfield,Mass.
	Notes for Mechanical Drawing	Taylor, Holden Co., Springfield,Mass.
McGee,R.A. & Sturtevant,B.S.	General Mechanical Drawing for J.H.S.,	The Bruce Pub.Co. N. Y. 1930
Rogers	Mechanical Drawing and Design	Theo.Audel & Co., 49 West 23rd St., New York
Royce,D.C.	Mechanical Drawing,	International Textbook Co., 1927

AUTHOR	TITLE	PUBLISHER
Tracey	Introductory Course in Mechanical Drawing	
Turner, W.W.	Essentials for Mechanical Drawing	Wiley, N.Y. West 23rd St., N.Y.
Weick, Charles W.	Mechanical Drawing Problems	McGraw, Hill, N.Y.
Woellner, R.C. and Wittick, E.C.	General Mechanical Drawing for Beginners	Library of Congress 1932.
Williams and Spencer	Technical Drawing for High Schools, Work Book I	
Younger, S.E.	Airplane Construction and Repair	McGraw-Hill, 1931
Zipprich	Freehand Drafting	VanNostrand, N.Y.

MAGAZINES OF INTEREST
TO
JUNIOR AND SENIOR HIGH SCHOOL ART TEACHERS

Magazines on Architecture and Allied Subjects.-Building, Domestic Architecture - interiors and exteriors; Materials - Wood, Marble, concrete, etc., Landscape setting, gardening; Engineering in relation to architecture.

ARCHITECTURE AND BUILDING (Monthly)

Construction materials and appliances, recent building operations, and pictures of interiors and exteriors of structures; also much of interest in architectural planning and building accessories in which beauty and utility are united. Can be used profitably for reference in reading and illustrative material by junior and senior high school students.

BUILDING AGE (Monthly)

Follows the trend of building operations in the various parts of the United States. It tells about such things as construction follies, the improvement of the old homestead, the validity of patents in building, recent civic auditoriums, factories and zoning and building codes for communities; the prospective home builder will find practical suggestions on the site, material, design and cost problem.

THE AMERICAN ARCHITECT (Semi-monthly)

The American Architect needs no introduction to

architects and art students. The numerous architectural plans and illustrations of complete private and public structures show our debt to the past, and reflect the inventive genius and ideals of America. While written for the professional, the subject matter is sufficiently non-technical to be understood and enjoyed by junior and senior high school students. Many full page plates and plans are given.

THE ARCHITECTURAL FORUM (Monthly)

Drafting plans of interiors and beautiful illustrations of domestic architecture and modern skyscrapers supplement the articles which reflect the best architectural thought of the day. There are discussions of European architectural precedents and the adaption of classic thought to the requirements of modern monumental architecture. Stress is put upon original building designs that accord with the character of the community.

THE WHITE PINE SERIES OF ARCHITECTURAL MONOGRAPHS
(Six numbers a year)

A valuable source of information on the wooden house of this country during earlier centuries. Though primarily planned for architects, laymen find must of interest about the colonial style of architecture and its finest original expression. There are full page plates of entire buildings, and pictorial and plan illustrations. The subject matter is within easy comprehension of junior and senior high school

students. The plates furnish an abundance of materials for visual instruction in art and may be used to advantage in correlation with history and classical studies.

CONCRETE (Monthly)

Supplies the need for simple, non-technical information on the subject of how to make good concrete for buildings dams, highway construction or smaller articles. The history of concrete in the world of building, the antiquity of its use, and the recent expansion of its structural functions according to modern scientific methods suggest other topics written up in this magazine. Contains useful reference material for junior high school students.

THROUGH THE AGES (Monthly)

Marble, its uses, universal adaptability, beauty, permanency, and economy is dealt with in this magazine. attractive in physical make-up there is much useful information and many Beautiful illustrations of marble buildings, trimmings, memorials, and tablets in all parts of the world.

GARDEN AND HOME BUILDER (Monthly)

The keynote is that beauty and durability in homes are enhanced by well-ordered gardens and landscape planting. Facts about domestic building, what and when to plant, and the history of building materials appeals to the layman as much as to the professional architect and the horticulturist. There are practical art lessons on color and on beauty and effectiveness through the mass planting of blooms and foliage.

Illustrations of houses and gardens are plentiful.

HOUSE AND GARDEN (Monthly)

One of the highest class magazines in subject matter, in illustrations of gardens and homes, in color notes on flowers and textiles, and in artistry of advertisements. In every number there is something on an art topic of practical value to junior and senior high school students.

HOUSE BEAUTIFUL (Monthly)

The "eye appeal" alone in the cover pages, in the colored advertisements and in the black and white illustrations should impel anyone who loves beauty for its own sake to thumb over again and again the pages of this magazine. From the utilitarian standpoint, there is a whole bookful of hints on building, planting gardens, furnishing, and the magic of color, to transform the house of no distinction into a home of charm with attractive landscape environment.

MAGAZINES ON COMMERCIAL ART AND RELATED SUBJECTS

Posters and window displays; the printed work in advertising; how to sell through effective printed matter; commercial management, etc.

THE AMERICAN ART STUDENT AND COMMERCIAL ARTIST (Monthly)

From cover to cover, this periodical is an inspiration to art students, teachers of art, and the general reader. In turning the pages, one meets with a panorama of green and brown tone reproductions of studies in still life, painting, sculpture, commercial art and industrial art designs. Edited

and endorsed by members of the Parent Teachers Associations, the Eastern and Western Arts Associations and the Associations of the American Art Students, the magazine is carefully done.

COMMERCIAL ART (Monthly)

An English magazine, profusely illustrated in color and neutral tones, articles, cover every phase of current advertising art in Europe and America. The presentation of window displays, show cards, designs, posters, and other publicity illustrations of selling commodities, designs for book covers and book jackets, make-up labels for the press, and trade mark devices,make the magazine indispensable to practical commercial art students and teachers.

PRINTERS INK (Weekly)

Articles are by persons directly concerned with methods of advertising, and salesmanship, and they give practical information about the ways and means which advertisers and salesmen use to inspire the buying mood in customers. There are facts about goods to be sold, criticisms of the "dull copy" in poor advertisements and articles dealing with the productive results of good colored advertisement and effective window display. No link in the chain of buying influences is missing in the volume of advertising matter and in the reading content. Junior and senior high school students will find many helpful suggestions for the making of posters.

THE INLAND PRINTER (Monthly)

Contains much about the best method for obtaining

results in the graphic arts industry, including letterpress and lithographic printing, engraving, electro-typing, binding and publishing. Illustrating and printing by all processes constitute its principle stock and practical illustrations demonstrate how type, design and color may be combined to produce typographic art. Advertising managers, printers, lithographers, paper men, photographers, artists and salesmen have long appreciated the contribution of "Inland Printer" to the printing field. Instructors and students of junior and senior high schools will find many avenues of approach to a better understanding and appreciation of art in printing and the allied industries.

PRINTED SALESMANSHIP (Monthly)

Includes principles, methods, and ideas on selling tactics by well known writers in the advertising world. Right advertising, based on sound ideas, put in good selling words and attractively presented, is stressed. Experts criticize the headline or beautiful picture which excites attention or admiration but does not increase the sale of advertised goods. Salesmanship classes, commercial art students and junior and senior high school students will find this magazine useful.

SALES MANAGEMENT (Semi-Monthly)

Specialists call attention to merchandising problems, tell about the sales policies of specific business houses, and offer suggested plans to eliminate fake advertising. Contains much useful material for teachers as well as business men.

FORBES (Semi-Monthly)

Men in the front ranks of business interests, captains of industry and heads of business corporations give concise analysis of the individual markets. Through the financial section one may get a comprehensive review of current developments, effective business, agriculture and industry.

SYSTEM (Monthly)

Takes stock of the favorable and unfavorable business factors of the month. Statistics of bank clearings, the stock market, railway traffic, electric power consumption, employment figures, building permits, retail trade, foreign trade, wholesale prices, commercial loans, and the agricultural situation are the principal indexes considered. Men who have arrived financially relate their experiences and tell how small enterprises and clever ideas expanded into great business corporations.

SPECIALTY (Monthly)

A magazine that is especially helpful to those engaged in salesmanship, Many questions on the personal element in selling, and sound dealer methods are fully threshed out by writers who have had practical experience in this line of work.

HOW TO SELL (Monthly)

Practical articles on how business men reap big profits as a result of knowing how, where, and what to sell.

THE CREDIT MONTHLY.

Merchants exchange ideas on how to combat and correct

such things as a returned-goods evil, cash discount piracy and also how to render helpful business service to distressed customers. Credit extension, collection procedure and other questions relating to credit management appear in every issue.

MAGAZINES ON INDUSTRIAL ART.

Design, applied and contructive; Materials for constructive work; Technical information.

DESIGN (Monthly)

A magazine for the teacher, student, and designer. Designs for surface patterns, printed textiles, china, jewelry, and leather work are included. The decoration and construction of ceramic wares, clay problems for the school poster making, design problems for high schools, panels for magazine covers, and the study of floral and animal motifs offer suggestions in projects and handling of the same for junior and senior high school students. Illustrated with beautiful colored plates.

EVERY DAY ART (Monthly)

A small booklet illustrated in color and in black and white. Contains news and comments on the future of school and industrial arts. Color, design, posters and interior decoration are some of the items which have appeared. It advocates the teaching of every day art to serve the interests of the home and the community and emphasized the value of beautiful pictures, porcelain and other attractive furnishings in the home.

THE INDUSTRIAL ARTS MAGAZINE (Monthly)

Keeps in touch with industrial art problems, types of work and latest methods in the various progressive schools in the country. Woodworking, electricity, tinshop work and applied design are representative topics discussed by teachers supervisors and superintendents.

JOURNAL OF THE AMERICAN CERAMIC SOCIETY (Monthly)

Devoted to the arts and sciences relating to the silicate industries, this periodical records statistics and the results of research made by American ceramic workers who are endeavoring to build up a science of ceramics which will enable us to produce finished products in the most efficient way. Some of the main topics are the problems encountered, experiments with kilns, materials, enamels and clay, temperature control, and firing time. In itself the review section of ceramic literature concerning the products of the potter's craft, past and present, is an agency through which interest in ceramic art may be stimulated.

THE GLASS INDUSTRY (Weekly)

Devoted primarily to glass technology, engineering, raw materials, glass factory equipment and operation. The Technical Consultation Service solves for its readers any problems pertaining to materials, laboratories, methods, etc. Teachers of Industrial art topics and advanced students will find this magazine helpful.

TEXTILE WORLD (Weekly)

In the technical section of this important periodical is much valuable materials about textile manufacturing processes and dyeing, bleaching, and finishing methods. The commercial end is brought to the fore in questions pertaining to the physical volume of the textile business, the output of raw materials for fabrics, and in indication of the market. Questions and answers on the origin of names for fabric materials and their practical value.

AMERICAN DYESTUFF REPORTER (Irregular)

Includes the proceedings of the American Association of Textile Chemists and Colorists. Though technical in treatment, much information can be utilized by junior and senior high school students.

THE ANTIQUARIAN (Monthly)

A magazine for the collector of antiques, works of art and rarities. Including illustrations and descriptions of furniture made by Chippendale, Hepplewhite, Adams and Sherator and traces their influences on the furniture output of America from the colonial era down to the present, discusses inventive genius of early American craftsmen in the realm of fine furniture; also the artistic sense of Duncan Phyfe. The inquiring collector, the art student, the teacher - all find something of value in learning to appraise antiques at their true worth, and discover that at least three of our early American Cabinet makers rank with English cabinet makers of the 18th Century.

One needs to go through only one number of the "Antiquarian" to feel the urge to know more about Bennington and Staffordshire potters, textile treasures, old silver, Paul Revere as a craftsman, Stiegel glass, chitzes and jade tones. Splendid reference material for High School Art classes and of special interest to the Junior High School.

VEREIN DEUTSCHE INGENOUR (Weekly)

Written in Germany, this important engineering periodical takes up subjects pertaining to power engines in steam boats, the elimination of gases, generating fuel, engineering construction in bridges, etc. Its set up and typography make this magazine a valuable contribution to advertising art.

DESIGNING WITH WILD FLOWERS, by SMITH.

Not a magazine, but a textbook of practical methods for teachers and students of art, the designer and the craftsman. Contents: Making balanced design units; Conventionalized with a mirror; Design application; Torn paper; Squares, stars and rosettes; Brush work - Batik simplified; Tonal values; Color; adapting photographs for decoration; the geometric basis; calendar for the year; additional plant drawings.

MAGAZINES OF MISCELLANEOUS SUBJECT PERTAINING TO ART.

THE SCHOOL ARTS MAGAZINE (Monthly)

This magazine, perhaps more than any other art publication, makes a direct appeal to the teacher. Its

presentation of actual work culled from class-rooms, from primary grades through the junior and senior high school departments affords a means of comparison with work accomplished locally and elsewhere and serves to show how each community works out its own projects. The teacher can always find inspiration for class problems suitable to the needs of her own school and a wealth of suggestions in methods of instruction. The advertising sections, design portfolios of animal and plant motif, of Indian decorative design and poster panels, as well as reviews of new art books, acquaint the art educator with the best material available.

THE AMERICAN MAGAZINE OF ART (Monthly)

A magazine of art, truly American in content, but cosmopolitan in the wide scope of topics discussed. In addition to reproductions of modern masters and masterpieces, of sculpture, painting and etching, one finds current art news concerning art associations, activities in various Art Museums of cities in the United States, recent accessions to important public and private art collections, and reviews of exhibitions in progress. The list of traveling exhibits of Fine and Industrial Arts is one of the many helpful features of this valuable periodical.

THE ARTS (Monthly)

The great variety of subjects treated in this magazine make it a valuable aid in art education. Architectural matters are written up from the viewpoint of the architect.

The history of painting and sculpture and modern movements such as cubism, the art of the motion picture, Negro art, tapestries, adventures in museum buying and articles on famous painters are among the topics contributed by authors, artists and teachers who have done much research laong special lines.

THE ART BULLETIN (Quarterly)

Offers to all engaged in art education an opportunity to become better acquainted with the art productions of previous centuries. As a cultural contribution in art and archaeology it is a valuable aid to art teachers. The arrangements and printing of its contents may be brought before the students as a splendid example of typographical art.

GAZETTE DES BEAUX ARTS (Monthly)

An important French periodical. A staff of eminent scholars and critics write on the past and contemporary productions in sculpture, architecture, painting, engraving, the decorative arts and music. Numerous fine illustrations ahd attractive typography add to its value.

THE PRINT COLLECTORS QUARTERLY

This English periodical popularizes a delightful field of art including engravings, etchings, dry-paints, lithographs, and mezzatints. Various issues reproduce in reduced fac-simile prints from the beginning of graphic arts down to the recent times. The student may study intimately the methods and works of famous men such as Rembrandt, Holbein,

Durer, Blake, Whistler, Pennell, and others. Print lovers who have not access to originals enjoy the reproductions and comparative evaluations of them by critics who are experts in this field. The index of artists and publishers is a useful guide for collectors.

THE BURLINGTON MAGAZINE (Monthly)

Writings on Chinese architecture, Flemish Art, Durer's drawings, galleries and museums, art in America and Europe, recently discovered paintings and surveys of the art field in literature give some idea of the type and diversity of the content of this magazine. It will appeal to teachers and the general reader alike.

THE MUSEUM NEWS (Semi-monthly)

Short news items, treat of all phases of museum activities including the problems of installation,housing and caring for collections, the training of museum docents, museum talks to adults and children, handicaps due to lack of funds, and constructive policies in general. The reader is kept informed of anthropology, biology, geology, and archaeology specimens. There are also notes on new publications and notices of bulletins and reprints.

THE ART NEWS (Weekly)

Contents devoted to timely references to painting, sculpture, antiques, applied art, art auctions, rare books and manuscripts. Recent purchases by the Metropolitan Museum of Art and other museums, the sale of rare prints and authentic reports on excavations are some of the topics given

space in this pictorial newspaper of art.

THE MENTOR (Weekly)

Art teachers who have referred to this magazine for topics on painting, sculpture and other timely subjects pertaining to art, have found not only an increased interest in their regular classroom activities, but an added appreciation of the beautiful brown and gray tone arts. The magazine features a "Who, What, When and Why" page on which students will find stimulating questions on art.

THEATRE ARTS (Monthly)

Comments and criticism of plays and much about play writing, staging and costume designing and every other subject in the category of the theatre. The many-sided appeal of the theatre and helps toward the appreciation of a widely enjoyed art are impressed upon the patrons of this magazine in entertaining and instructive articles.

THE WOMAN'S HOME COMPANION (Monthly)

One of the popular magazines dealing with women's interests in the child and in the home, handicraft and embroidery, distinction in costumes, stories by famous authors and how to make pin money. From the viewpoint of the art teacher and teacher of salesmanship, the advertising pages furnish specimens of national advertising effective from an artistic and practical angle. Much of this material represents the work of our leading artists.

THE AMERICAN JOURNAL OF ARCHAEOLOGY (Quarterly)

One of the authoritative channels for the publication of the work of the excavator. It is a record and estimation of scholarly adventure in which every available vestige of the past is unearthed and salvaged from the buried sites of antiquity. The personal note of the living excavators gives a popular interest to many of the articles. Discoveries of potherds, pottery, papyri, and other inscriptions, tombs, jewelry, copper implements, household utensils, painting, sculpture, and architecture aid the scholar in the reconstruction of artistic, political and religious life of ancient people.

JOURNAL OF HELLENIC STUDIES (Two numbers a year)

Records the controversy and research efforts of scholars in their estimation of archaeological finds in the fields of architecture, sculpture, painting and industrial arts. Graphic illustrations and numerous footnotes quoting sources make this periodical more valuable to the student.

OTHER WORTHWHILE MAGAZINES

Art and Archaeology

Arts and Decoration

Architectural Record

Color Magazine

Design Keranic Studies

Every Day Art

Harper's Bazaar

Pencil Points

The Costume Royal

Vanity Fair

Vogue

BOOKS WITH PICTURES BY FAMOUS ILLUSTRATORS[1]

ILLUSTRATORS	TITLES
Atwell, Mable Lucie	Peter Pan and Wendy
Bosschere, Jean de	The City Curious
Bosschere, Jean de	Folk Tales of Flanders
	(Persian minature style)
Dulac, Edmund	Arabian Nights
Dulac, Edmund	Stories from Hans Anderson
Dulac, Edmund	Tanglewood Tales
	(Persian minature style)
Dulac, Edmund	The Sleeping Beauty
Dulac, Edmund	The Tempest
Hinore, Paul	Tales from Silverland (Woodblocks)
Lathrop, Dorothy	A Little Boy Lost
LeMair	Our Old Nursery Thymes
Monvil, Boutet de	Jeanne d'Arc
Neilson, Kay	East of the Sun and West of the Moon
Parish, Maxfield	Arabian Nights
Parish, Maxfield	Knave of Hearts
Parish, Maxfield	Poems of Childhood
Pelestram, Maude and Miska	The Poppy Seed Cakes
Pennell, Joseph	Pictures of the Panama Canal
Pennell, Joseph	Pictures of the Wonder of Work
Pennell, Joseph	Venice, the City of the Sea
Pogany, Willy	Arabian Nights
Pogany, Willy	The King of Ireland's Son
Pogany, Willy	Forty-Four
Pyle, Howard	Book of Pirates
Pyle, Howard	A Wonder Book
Pyle, Howard	Otto of the Silver Land
Pyle, Howard	The Wonder Clock

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[1] Fine and Allied Arts, Detroit High Schools, Published by authority of the Board of Education, Detroit, Michigan, 1926, Pages 101-2.

ILLUSTRATORS	TITLES
Rackham, Arthur	Peter Pan in Kensington Gardens
Rackham, Arthur	Rip Van Winkle
Rackham, Arthur	Some British Ballads
Rackham, Arthur	Tales from Shakespeare
Rackham, Arthur	The Nibelerngen Ring
Rackham, Arthur	The Romance of King Arthur
Smith, Jessie Wilcox	A Child Book of Stories
Smith, Jessie Wilcox	At the Back of the Wind.
Smith, Jessie Wilcox	Water Babies
Tinggren, Gustave	D'Aulonys Fairy Tales
Wyeth, N. C.	Legends of Charlemagne
Wyeth, N. C.	The Black Arrow
Wyeth, N. C.	Treasure Island

PAMPHLETS

School Arts Publications - The Davis Press, Worcester, Mass.

Bradley's Pencil Studies - Milton Bradley Co., Springfield, Ohio

Research - Design in Nature - J. Gilbert Wilkins -
Practical Drawing Company,
Dallas, Texas.

Art of Lettering - The Davis Press, Worcester, Mass.

Birds in Art - The Davis Press, Worcester, Mass.

Busy Bee Packets - The Davis Press, Worcester, Mass.

Decorative Drawing-The Davis Press, Worcester, Mass.

Gift Card Designing-The Davis Press, Worcester, Mass.

Human Proportion - The Davis Press, Worcester, Mass.

Pen & Ink Drawing -The Davis Press, Worcester, Mass.

Plant Form & Design-The Davis Press, Worcester, Mass.

Poster - The Davis Press, Worcester, Mass.

Hue in Art - The Davis Press, Worcester, Mass.

Costume Design - The Davis Press, Worcester, Mass.

PUBLISHERS OF POST CARDS AND SMALL PRINTS [1]

Art Appreciation Publishing Co.
109 North Union Street,
Akron, Ohio

Art Extension Society,
415 Madison Avenue,
New York, N. Y.

George P. Brown & Co.,
38 Lovett Street,
Beverly, Mass.

Brown-Robertson Co.,
415 Madison Avenue,
New York, N. Y.

Chicago Art Institute,
Chicago, Ill.

George H. Clark,
543 S. Clinton St.,
Syracuse, New York.

The Colonial Art Company,
1336 West First Street,
Oklahoma City, Oklahoma.

The Copley Prints,
Curtis and Cameron,
Harcourt Street,
Boston, Mass.

Detroit Institute of Ars,
Detroit, Michigan

Detroit Publishing Co.,
3925 Vermont Ave.,
Detroit, Michigan.

Elson Company,
Belmont, Mass.

Japan Art & Novelty Co.,
723 Marquette Ave.,
Minneapolis, Minn.

Media Society of America,
755 Boylston Street,
Boston, Mass.

Metropolitan Museum of Art,
New York,
N. Y.

Perry Picture Company,
Malden,
Mass.

E. T. Shima,
47 W. Forty-second Street,
New York, N. Y.

University Prints,
Newton, Mass.

SCULPTURE

The Boston Sculpture Co.,
799 Main Street,
Melrose, Mass.

Caproni Casts,
P. P. Caproni & Brother,
1914-1920 Washington St.,
Boston, Mass.

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[1] Fine and Allied Arts, Detroit High Schools, Published by Authority of the Board of Education, City of Detroit, 1926, Page 103.

APPENDIX

REFERENCE LIST

Andrews, G. Winthrop, Director of Art Education, Yonkers, N.Y., Constitution and By Laws of a Typical Art Club.

Appleton, Wisconsin Junior High School, Program of Study.

Architecture, Guidance Leaflet, No. 10, (revised), U.S. Department of the Interior, Office of Education, U.S. Government Printing Office, Washington, D.C., 1932.

Art, Guidance Leaflet, No. 20, U.S. Department of the Interior, Office of Education, U.S. Government Printing Office, 1932.

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Class Room Teacher, The, Vol. II, Pages 6 & 7.

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Electrical Engineering, Guidance Leaflet, No. 12, U.S. Department of the Interior, Office of Education, U.S. Government Printing Office, Washington, D.C., 1932.

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Fitzpatrick, Thomas K., Thesis of Bachelor of Architecture,Lowthrop School of Architecture, 1933.

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Goodenough, F., The Measure of Intelligence by Drawings,

Guenther, Otto V., The Course of Study in Related Drafting, The School Magazine, Seneca Vocational High School, Buffalo, N.Y., Pages 8 - 10.

Heckman, Albert W., Lecture on "Art in Public Schools", Teacher's College, Columbia,University.

House Beautiful, 1917.

Howe, Charles B., Agricultural Drafting, Wiley Technical Series, John Wiley & Sons, Inc., N.Y.,1913.

Jacobs, Harry W., Sketching with Venus Pencils, American Pencil Co., N.Y. City, N.Y.

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Kellerman, Fritz, The Effect of the World War on European Education, Harvard Bulletin on Education, No. XIII, 1928, Page 58.

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